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THE LIMITATIONS AND POSSIBILITIES OF PRENATAL CARE

BASED ON THE STUDY OF 705 FETAL DEATHS OCCURRING IN 10,000 CONSECUTIVE ADMISSIONS TO THE OBSTETRICAL DEPARTMENT OF THE JOHNS HOPKINS HOSPITAL *

J. WHITRIDGE WILLIAMS

Professor of Obstetrics, Johns Hopkins University

BALTIMORE

My first duty on this occasion is to express my sincere appreciation of the honor of being elected to the presidency of this association, and, as the incumbent of that office, to thank the very efficient local committee of arrangements for their efforts in making it possible to hold our meeting at a time when our sympathies are enlisted in a much broader and more serious cause.

Before taking up the discussion of the subject which I have chosen for my address, I wish to go on record as endorsing the objects of the association, as well as to bear witness to the wisdom displayed in its original organization. In no other way, I believe, could such wide-spread interest have been aroused and so much good have been accomplished as by bringing together all classes of persons interested in the welfare of infants. At each of the meetings which I have attended I have been greatly impressed with the character of the audiences, and I feel sure that the association of trained nurses, social workers, statisticians and physicians, with philanthropically inclined laymen, has been productive of an amount of good which could have been effected in no other way, and which would have been impossible had the association been made up of any single class of persons, no matter how interested or intelligent they might be.

Naturally, my interests in the association are primarily as an obstetrician and deal with the prevention of infant mortality in the earliest periods of life and even before birth. Investigation along these lines has led me to study the character of the obstetric care which is available for the great majority of women in this country, and has convinced me that it is inexcusably poor. This, however, is neither the time nor the place to consider such problems; but, when I face an audience such as this, I almost wish, were the country not already oversupplied with societies, that a somewhat similar association might be organized for the study of the problems connected with motherhood and the diseases peculiar to women, and for teaching the women of this country that they have a right to the best available treatment and care, which should be at least as good as that available for their young children, and better than that so freely given to the domestic animals by our national and state governments.

The theme which I have chosen for my address is "The Limitations and Possibilities of Prenatal Care." Certain phases of the subject have frequently been presented to you, and will be one of the topics for discussion at this meeting. I am, however, inclined to feel that it is often considered from too narrow a point of view, and my chief object in preparing this address is the hope that I may be able to impress on you that prenatal care covers a very wide field, which, while primarily obstetric, is not limited to any one branch of medicine or social activity.

The foundation of my remarks is the study of 705 fetal deaths which occurred in ten thousand consecutive admissions to the Obstetrical Department of the Johns Hopkins Hospital, 6,500 indoor and 3,500 outdoor cases. In this series I have included all deaths occurring in children born between the seventh month of pregnancy, the so-called period of viability, and full term, as well as those occurring within the first two weeks after delivery. For convenience in consideration I have classified the children as premature or mature, according as their weight varied between 1,500 and 2,500 gm., or exceeded the latter figure. Of the 705 deaths, 334 were in the former, and 371 in the latter category.

These figures somewhat underrepresent the total mortality, as they do not include many children which perished later from the causes enumerated below, either in my service, in other departments of the hospital or in their own homes. Furthermore, it must be borne in mind that they do not necessarily represent the results which may be obtained in private practice, but are based on the material entering a large general hospital, which includes many women who had been improperly treated at home and were admitted to the hospital in desperate straits.

Moreover, our material differs from that of many institutions in that 4,600 out of the 10,000 mothers were colored, thereby making it possible to compare the incidence of certain causes of death in the two races. In addition, our statistics are of unusual value for two reasons: First, that every one of the 10,000 after-births in the series has been carefully described and subjected to routine microscopic examination — a procedure which sometimes yields most important information; and secondly, that most of the dead babies have been subjected to autopsy. Consequently, the causes of death have been ascertained with more

* Presidential address, delivered before the American Association for Study and Prevention of Infant Mortality, Boston, Nov. 12, 1914.

than usual accuracy; but even in such favorable circumstances, it is not always possible to make a positive diagnosis.

Table 1 gives the gross results of our investigations, the causes of death being classified into twelve general groups, while information is also given as to the prematurity or maturity of the children and their race.

The most striking features of the investigation are the following:

(*a*) Syphilis is far and away the most common etiologic factor concerned in the production of death, presenting an incidence of 26.4 per cent.

(*b*) Toxemia, including eclampsia, nephritis and occasional rare conditions, which is usually regarded as the condition *par excellence* which can be influenced by prenatal care, is the cause of only 6.5 per cent. of the deaths, and consequently is accountable for only one-fourth as many as syphilis.

(*c*) Notwithstanding most painstaking investigation, the cause of death could not be satisfactorily explained in 127 cases, or 18 per cent.

microscopic study of the placenta showed that 350 syphilitic children had been born of the 10,000 women under consideration. In Table 1, 186 are included, leaving nearly as many more — 164 — which were still alive at the end of two weeks, and either soon died or presented manifestations of hereditary syphilis later in life. Even these figures probably underestimate the incidence of the disease, as a diagnosis was made only when characteristic microscopic changes were present in the placenta, a positive Wassermann reaction demonstrated in the fetal blood, or specific lesions were found at autopsy. Accordingly, it is probable that a certain number of cases escaped detection, and plausibility is lent to such a contention by the fact that fifty-three of the children in the next group were born in a macerated condition, and experience teaches that 80 per cent. of such children are syphilitic.

However that may be, the fact remains, which cannot be too strongly impressed on you, that syphilis is the most common single cause of fetal death, not to speak of its ravages in the children which do not

TABLE 1.—CAUSATION OF 705 FETAL DEATHS

Cause	White	Black	Total	Percentage Incidence	Premature		Mature		Estimated Percentage after Prenatal Care
					White	Black	White	Black	
1. Syphilis	35	151	186	26.4	22	112	13	39	13
2. Unknown	39	88	127	18	12	37	27	51	15
3. Dystocia	61	63	124	17.6	4	6	57	57	6
4. Various	30	49	79	11.2	7	11	23	38	11.2
5. Prematurity	14	36	50	7.1	14	36	—	—	3.6
6. Toxemia	32	14	46	6.5	17	6	15	8	2
7. Deformity	18	6	24	3.4	8	3	10	3	3.4
8. Inanition	11	12	23	3.3	9	10	2	2	1.6
9. Placenta praevia	20	2	22	3.1	10	2	10	—	1.5
10. Premature separation of the placenta	7	6	13	1.8	4	4	3	2	1
11. Suffocation (criminal)	3	3	6	0.9	—	—	3	3	0.5
12. Debility	3	2	5	0.7	—	—	3	2	0.5
Totals	273	432	705	100.0	107	227	166	205	59.3
	705				334		371		
					705				

(*d*) The death rate is nearly twice as high in the blacks as in the whites, 9.4 and 5.1 per cent., respectively, and equals or exceeds that of the whites in all but three categories, namely, toxemia, deformities and placenta praevia.

CAUSES OF FETAL DEATH

After these preliminary remarks, I shall consider each cause of death separately, and afterward draw certain conclusions as to their bearing on the problems of prenatal care.

1. *Syphilis.*—Although it has long been known that this disease plays an important part in the causation of fetal death and should always be borne in mind when successive pregnancies end in the birth of dead children, I was greatly surprised to find that it was accountable for 186 of the 705 deaths, or 26.4 per cent., and that it constituted the most common single etiologic factor concerned. It was observed much more frequently in the blacks than in the whites, the incidence being 35 and 14 per cent., respectively, and was the direct cause of two-fifths of the deaths occurring in the premature children.

These startling figures, however, do not tell the whole story of the ravages of the disease, as routine immediately succumb to it, and that in the future no statistics bearing on prenatal care can make any claim to completeness which do not take it into consideration.

2. *Unknown Causes of Death.*—Strange to say, the second largest contingent of fetal deaths is included under this category. One hundred and twenty-seven children, 18 per cent., were born dead or succumbed during the two weeks following birth without our being able to discover a satisfactory explanation for the fatal issue. Indeed, the only suggestive finding was the fact that fifty-three, or nearly one-half, of the children were macerated when born. I have already suggested the possibility that undetected syphilis may have been concerned, and I believe it is reasonable to assume that probably forty of these children, or approximately one-third of the group, really perished from it. With this exception, no definite statement can be made, and we are compelled to confess that the means at present at our disposal do not always enable us to adduce a satisfactory explanation for a considerable number of fetal deaths.

3. *Dystocia.* — Under this caption I have grouped together the deaths following mechanically difficult labor, whether operative or spontaneous. In many instances it was the result of disproportion between

the size of the child and the pelvis of the mother, while in a smaller proportion it was due to abnormal presentations of the child or to other factors resulting in delayed labor. The group, however, does not include the difficult labors associated with eclampsia or complicated by hemorrhage preceding the birth of the child, which are classified under separate headings.

One hundred and twenty-four fetal deaths are included in this category, an incidence of 17.4 per cent., and occurred more frequently in whites than in blacks — 22 and 14.5 per cent., respectively. This is a somewhat surprising conclusion when it is recalled that abnormal pelves are noticed three or four times more frequently in black than in white women, and that the most extreme degrees of deformity occur almost exclusively in the former. To my mind, the explanation for this apparent contradiction is afforded by two factors: First, colored children as a rule are smaller and have softer heads than white children, with the result that moderate degrees of pelvic contraction are frequently compensated for, so that easy spontaneous labor may take place in spite of the contracted pelvis. Secondly, extreme disproportion is readily recognized, when the patients are promptly subjected to cesarean section or other radical mode of delivery, with ideal results for both mother and child. On the other hand, in white women, who as a rule present only moderate degrees of pelvic contraction, the children are comparatively large, so that the resulting disproportion is relatively great. Unfortunately, the recognition of this type of dystocia requires great diagnostic skill, and frequently is impossible until the woman has advanced so far in labor that the time has passed for the employment of the ideal method of delivery, and the child succumbs to the makeshift procedure which we are compelled to employ.

Consequently, one of the most important lessons to be learned from this group of cases is that moderate degrees of pelvic contraction are much more serious in white than in black women, and that the most expert skill is required for the recognition of the disproportion and for the choice of the ideal method of delivery.

I have carefully studied the history of each patient in this group in the attempt to ascertain to what extent the fetal mortality might have been diminished or prevented. In the first place, I found that in twenty-five cases outside physicians or midwives had failed to effect delivery and had transferred the patient to the service when the child was already dead or so damaged that it succumbed shortly after birth. Most of these deaths should be attributed to ignorance, and could have been prevented had the patients received skilled care at the proper time. On the other hand, I found an equal number of cases in which the death of the child was due to errors of judgment by myself or my assistants. In a certain proportion of the cases the result must be regarded as "the premium paid to experience," and was due to inexperience on the part of my resident, who either delayed too long before interfering, interfered too soon, or failed to select the ideal procedure for delivery. In other cases the fault was my own. In most instances, however, the error of judgment was unavoidable, and was recognized as such only after the treatment of the patient had been cooly reviewed months or years afterward. Consequently, only a certain proportion of such deaths are really preventable.

On the other hand, in seventy-four cases of the series most rigorous criticism fails to reveal any cause for reproach, and I believe that the deaths were unavoidable when all the factors concerned are taken into consideration. Thus, it would appear that a considerable fetal mortality is inherent to the class of cases under consideration and cannot be avoided.

4. *Various Causes.*—Under this heading are included seventy-nine deaths, 11.2 per cent., due to thirty different accidental complications which were equally divided between the two races. An idea as to their great variability may be gained from Table 2, which includes all conditions which were observed in two or more instances.

TABLE 2.—VARIOUS CAUSES OF DEATH

Cause	No. of Cases
Hemorrhagic diseases	14
Bronchopneumonia	13
Cord infection	6
Strangulation by loops of cord	5
Umbilical hemorrhage	4
Hydramnios	4
Enteritis	4
Gastritis	2
Asphyxia	2
Neglect	2
Cerebral hemorrhage (spontaneous labor)	2
Status lymphaticus	2
Trauma	2
Various conditions, each of which occurred but once	17
Total	79

In other words, fifty of the deaths were due to the seven causes mentioned first, while the remaining twenty-nine were attributable to twenty-three different causes. In general, very few of these deaths could have been prevented, and it is interesting to note that practically one-third were due to hemorrhagic disease or to bronchopneumonia. Furthermore, it should be observed that twelve out of the fourteen cases of the former occurred in negro children, while the incidence of the latter was identical in the two races.

I am unable to state whether or not the remarkable predominance of blacks perishing from hemorrhagic disease has any especial significance, as we are almost completely ignorant concerning its cause.

5. *Prematurity.*—Under this heading I have grouped together fifty deaths occurring in premature children which were born alive but perished during the first week of life, and whose death could not be attributed to syphilis, toxemia or any of the causes enumerated in the table. Autopsy usually revealed no definite cause for the fatal issue, which apparently was due to the inability of the poorly developed child to lead an extra-uterine life.

Cases of this character occurred much more frequently among the blacks, and are attributable in part at least to the lack of care and intelligence which so frequently characterizes that race.

6. *Toxemia.*—The various toxemic conditions were responsible for forty-six deaths, 6.5 per cent., which were equally divided between premature and mature children. Strange to say, white children were involved nearly three times more frequently than black, although it is impossible to adduce a satisfactory explanation for the difference.

The prevention of the development of these conditions is one of the chief aims of prenatal care, and it must be said that the great majority of our cases occurred in women whose pregnancies had not been supervised, but who were seriously ill before entering the service.

7. *Deformities.* — Under this heading are grouped together twenty-four deaths occurring in children which presented congenital deformities which were incompatible with life, or which gave rise to such mechanical obstruction as to lead to their death at the time of labor.

Table 3 gives an idea of their character and incidence.

TABLE 3.—DEATHS FROM CONGENITAL DEFORMITY

Deformity	No. of Cases
Acrania	6
Hydrocephalus	6
Imperforate anus	3
Congenital edema	2
Osteogenesis imperfecta	2
Hemimelus	1
Congenital cystic kidney	1
Achondroplasia	1
Spina bifida	1
Absence of pylorus, situs transversus	1
Total	24

Such deformities are attributable to errors in development occurring within the first few weeks of life following conception, and cannot be prevented. It is interesting to note that three-fourths of them occurred in white children, and were about equally divided between those which were born prematurely and at full term.

8. *Inanition.* — In this category I have collected twenty-three deaths occurring between the seventh and fourteenth days, for which autopsy failed to reveal a satisfactory explanation. As all but four of the children were premature, this group of deaths might have been considered under prematurity, the only point of difference being that death occurred during the second instead of the first week.

9. *Placenta Praevia.* — Under this heading are included twenty-two deaths which were associated with abnormal implantation of the placenta. This condition gives rise to severe hemorrhage, which necessitates the termination of pregnancy, no matter to what period it may have advanced, and is always associated with a high fetal mortality. The children were almost equally divided between premature and mature, but the most interesting feature connected with this group is that only two deaths occurred in colored children. I am unable to advance an explanation for this peculiarity, as *a priori* the condition should occur with equal frequency, and should be attended by approximately the same mortality in the two races.

10. *Premature Separation of the Placenta.* — The partial or complete separation of the normally implanted placenta before the onset of labor constitutes one of the most serious complications of pregnancy, and if complete always leads to the death of the child and frequently to that of the mother. It was responsible for thirteen deaths in our series, which were approximately equally divided between the two races.

11 and 12. *Suffocation and Debility.*—The conditions comprising these two groups occur so infrequently as not to require especial consideration.

EFFECT OF PRENATAL CARE

Having thus reviewed the various causes of fetal death in our series, I shall briefly consider each group from the point of view of prenatal care, and determine as far as possible to what extent its intelligent application might have been effective in reducing early infantile mortality. I am well aware that any such estimate is dependent on the personal attitude of the person making it, and at best can be only approximate. Definite statements cannot be made until numerous series of thousands of cases each have been adduced, in which all of the mothers had been the recipients of intelligent prenatal care. Such statistics are not yet available, and I fear that some time will elapse before they are.

1. *Syphilis.*—I feel that the chief value of this investigation consists in the demonstration that syphilis is the most important single factor concerned in the production of fetal death, certainly when the material includes considerable numbers of negro patients. For this reason it must receive important consideration from those interested in prenatal care and in the reduction of infantile mortality. Unfortunately, it is not an easy task to combat its effects. Mere education in sexual matters will do but little good in the class of patients concerned, as we are dealing with realities and not with utopian theories. What is necessary is to recognize the disease in the mother at the earliest possible moment, and then to subject her to appropriate antisyphilitic treatment in the belief that the drug administered to her will be transmitted to the child and effect its cure.

The treatment is comparatively simple, but the difficulty lies in making the diagnosis. Unfortunately, for our purpose, not more than one-fourth of syphilitic pregnant women present lesions from which a clinical diagnosis can be made, with the result that in three-fourths of the cases the condition is usually unsuspected until a dead-born child is subjected to autopsy, or a living child develops symptoms of hereditary syphilis. Indeed, in a large proportion of our cases the condition would have escaped detection had it not been our custom to examine every placenta microscopically, and to insist on an autopsy wherever feasible.

How can the desired end be effected? I am afraid that ideal results cannot be obtained unless a Wassermann test is made in the early months of pregnancy on every woman applying for obstetric aid. Such a procedure is out of the question on account of its expense, and the best that we can do is to bear the possibility of syphilis constantly in mind, and to teach those engaged in practical work to be always on the lookout for it. This would result in the detection of about one-fourth of the cases, while the other three-fourths would escape.

Fortunately for our problem, the effects of unrecognized maternal syphilis are not limited to the birth of a single dead child or by the development of a single case of hereditary syphilis, but the woman continues to give birth to a succession of dead-born children. Consequently, we should always regard the birth of a dead child with suspicion, and, unless it is perfectly apparent from the history that syphilis was not concerned, the blood should be subjected to the Wassermann test, and in case a positive reaction is obtained the mother should be given appropriate treatment, with the certainty that one-half of the children which are now lost would be saved, and the woman herself put in condition to bear normal children in the future.

This is not the time or the place to enter into a discussion as to the possibility of the paternal transmission of syphilis or the proper treatment of the disease; but enough has been said to demonstrate that ideal prenatal care demands much more than the

examination of the urine and instruction as to the desirability of breast feeding, and must include an extensive knowledge of syphilis. For it is only by its recognition and treatment that this important cause of fetal death can be partially eliminated.

2. *Unknown Causes.*—In view of the fact that our knowledge at present is insufficient to permit us to determine the cause of death in this class of cases, nothing can be said of the prospect of immediate improvement by means of prenatal care, except in so far as the detection and treatment of obscure cases of syphilis is concerned. Naturally, future investigations will gradually lead to a decrease in the size of this group, and will open up avenues of prevention which do not now exist.

3. *Dystocia.*—In this group of cases the intelligent application of prenatal care in its broadest sense offers great promise of better results. As has already been indicated, the disasters in this group are in great part due to pelvic abnormalities, or to excessive size or abnormal presentation of the child. Such conditions cannot be detected or remedied by the most intelligent prenatal nurse, and their recognition will be possible only after all women have been educated to go to a competent obstetrician or to a well-regulated obstetric dispensary for a preliminary examination one month before the expected date of confinement.

If abnormalities are found, the woman should enter a hospital for delivery, and the public should be taught to realize that safety is to be found only in ideally organized obstetric hospitals. Too many sins of omission and commission are now covered by the hospital roof, and in many the sense of security is illusory, as the woman may be treated by short-term assistants, who are often less competent than the much-maligned practitioner. These women should not be delivered in their own homes by a doctor or midwife, or even by the outdoor service of the hospital, as their safety and that of their babies depend on the expert service which can be obtained only in a well-regulated hospital. Generally speaking, even in the absence of a recognized abnormality, the history of a dead-born child in a previous labor should always be regarded as an indication for hospital treatment.

It is my belief that at least two-thirds of the fetal deaths due to these factors could be prevented if suitable care were available. On the other hand, greater optimism is not permissible, as, no matter how skilled the medical attention may be, a considerable mortality will always be associated with such cases.

4. *Various Causes.*—As was indicated in the corresponding previous section, the deaths occurring in this group are due to a large number of accidental factors, concerning whose cause and prevention we are in great part ignorant. Consequently, it is not probable that any great diminution can be effected in this group by the means at present available.

5. *Prematurity.*—Prenatal care and instruction offer great possibilities for the diminution in the number of deaths due to this cause. In her visits to the homes of ignorant and overworked women the prenatal nurse can prevent many premature labors by giving instruction in personal hygiene, insisting on rest and abstention from excessive work during the later months of pregnancy, and, where imperfect nutrition is manifest, by putting the woman in touch with appropriate agencies for relief.

It has been established beyond peradventure that one of the most potent causes of premature labor and the birth of poorly developed children consists in overwork and poor nutrition in the last months of pregnancy; and my own observation has demonstrated that the smaller size of the average colored child is dependent on insufficient and unsuitable food, and that a stay of several weeks in the hospital before labor will result in an increase of from 8 to 16 ounces in the size of the children which will then compare favorably with those of white women in comfortable circumstances.

While the state is not yet prepared to follow the example of France and Germany in ensuring the working woman a period of rest during the weeks immediately preceding labor, I am confident that intelligent prenatal care along the lines indicated would soon do away with at least one-half of the deaths due to prematurity.

6. *Toxemia.*—The fact that only forty-six children in our series perished as the result of toxemia indicates that preventive work in our service has resulted in appreciable improvement, as the great majority of deaths occurred in the children of women who had applied for aid only after the disease had become fully established.

For some years the prevention of toxemic conditions has been recognized as one of the main functions of prenatal care and has accomplished great good. Every practitioner knows how difficult it is to induce even intelligent women to send specimens of urine for examination at regular intervals, and that it is practically impossible in the type of women who come to the obstetric dispensary. Consequently, one of the most important functions of the prenatal nurse is to follow up the patients in this regard, and when abnormalities are detected to see that the women enter the hospital for prophylactic or curative treatment.

In my own material I am confident that the mortality from this cause could have been reduced four-fifths had suitable prenatal care been available. At the same time, I think it right to insist that complete abolition of death from this cause is an unattainable dream, as I know from my own experience that patients who have been constantly under ideal supervision occasionally develop and sometimes die from toxemia.

7. *Deformities.*—Under the appropriate heading I indicated that the deformities in question originated during the first weeks of pregnancy, and therefore no diminution in the number of deaths from this cause can be expected from prenatal care. Furthermore, I am inclined to believe that more careful investigation will lead to the recognition of an increasing number of such cases, as is shown by the fact that since completing the tabulations on which this study is based, I have seen two dead babies born which would previously have been classified in the "unknown cause" group, but in which very thorough autopsy demonstrated that death had been due to abnormalities of the nervous system which were incompatible with life and which had originated during the first weeks of development.

8. *Inanition.*—All that can be said of the prevention of death from this cause has already been said under the heading "prematurity."

9. *Placenta Praevia.*—Only a few of the twenty-two deaths from this cause could have been prevented by prenatal care and then only indirectly. Had all of

the women suffering from this abnormality been taught that bleeding during the last months of pregnancy was a serious matter and demanded expert hospital care, it is probable that a considerable number of them and their children might have been saved, instead of being sent to the hospital in a dying condition by doctors or midwives who had attempted to treat them in their own homes.

The greatest hope for improvement in this condition lies in preventive measures, put in operation months or years before the condition develops. In other words, since the causative factor in the production of placenta praevia consists in inflammatory conditions of the lining membrane of the uterus, resulting from infection in previous labors or abortions, the chief means of prevention consists in good obstetric care in preceding labors.

10. *Premature Separation of the Placenta.*—Thirteen fetal deaths were attributable to this cause, but as we are in great part ignorant of the exact mode of production of the accident, it is evident that even the most intelligent prenatal care could not have been effectual in preventing it.

Furthermore, in view of the fact that the complication runs a rapid course and is frequently very difficult of recognition, it is unlikely that the majority of women affected could have been sent to the hospital sufficiently early to have been subjected with any great hope of success to the radical operative procedures which are essential for saving the child; while in many instances it is a matter of congratulation if it is possible even to save the mother.

11 and 12. *Suffocation and Debility.*—These factors in the causation of infantile death occurred so rarely in our series of cases and were so clearly beyond the influence of prenatal care that they do not call for consideration.

Having thus reviewed the causes of fetal death in our series and considered the extent to which they might be decreased by ideal prenatal care, I have indicated in the last column of Table 1 what appears to me to be the proportion of deaths which must be expected and which cannot be appreciably diminished by any means at our disposal.

It would therefore appear that the fetal mortality in our material might have been reduced 40 per cent. had it been possible for all of our patients to have the advantages of the type of prenatal care which I shall briefly sketch, and with the further proviso that they had received practically ideal obstetric care in the hospital. In this event nearly 300 additional children could have been discharged from the service in good condition.

In criticizing our results, it should be borne in mind that our material is of the type which ordinarily applies for aid at a large general hospital, and is less favorable than in many institutions for the reason that nearly one-half of the patients are negroes with scant intelligence and afflicted by contracted pelves and syphilis to an extent in no way approached by white patients. In general, I believe I can fairly assert that the treatment at the time of labor compares favorably with that of other institutions, but on the other hand, I must frankly confess that the care during pregnancy was far from ideal, and until two years ago consisted solely in such supervision as could be afforded in the dispensary to patients who voluntarily obeyed our directions to return at stated intervals for supervision and examination. During the past two years, however, thanks to the cooperation of the "milk fund" nurses and of the children's clinic, conditions have materially improved, and at the present moment the hospital has provided funds to enable us to make a start with efficient prenatal care.

If we have to register a total mortality of 7 per cent., with all the resources of a large hospital and university behind our service, which has been fortunate in being provided with an exceptionally competent nursing and resident staff, it is appalling to contemplate the conditions which must obtain in private practice among the poor and in some institutions which are less favorably situated.

I shall now outline briefly my ideas concerning efficient prenatal care in large cities, and shall consider its relations to other departments of medical and social service work.

I believe that too narrow a view is ordinarily taken of the scope of prenatal care, which is regarded on the one hand almost solely as a means of preventing toxemia, and on the other as a side issue in the propaganda for breast feeding. If ideal results are to be obtained, neither view is correct, and if the consideration of the facts which I have presented has served its purpose it will have convinced you that broad-minded prenatal care has an immense scope and can be carried out effectively only under the auspices of a well-regulated obstetric department which can command the enthusiastic cooperation of carefully trained obstetricians, social service workers and prenatal and outdoor obstetric nurses, and at the same time is in close affiliation with a children's clinic with its corps of organized workers, or at least with a well-conducted milk association. Furthermore, the closest relations must be maintained with the other department of a general hospital, whose resources should be readily available to the mother and children when necessary.

ORGANIZATION OF PRENATAL WORK

In an obstetric department such as I have indicated, the prenatal work should be conducted primarily from the dispensary, which should serve as the portal of entry for all prospective patients irrespective of whether they expect to be treated in the hospital or in their own homes.

The first requisite for such a dispensary is that it should have proper quarters, an ideal personnel and adequate financial support. The purely medical work should be under the direct supervision of the director of the hospital, and should be carried out by medical men who are sufficiently well trained to make a reliable diagnosis. A considerable proportion of them, at least, should be assistants living in the hospital, in order that the work of the indoor and outdoor departments may be satisfactorily coordinated. In addition to the medical assistants, the necessary number of nurses should be in attendance to care for the ordinary needs of the patients, but more important is the requisite number of prenatal nurses. These should be graduate nurses with considerable obstetric experience, who have also had a certain amount of training in social service work, and should receive adequate salaries.

Patients should be encouraged to come to the dispensary as early as possible in pregnancy. After registration, a careful physical examination should be made and its results recorded. This should not

be limited to purely obstetric conditions, but should include the entire body, with especial reference to syphilis and tuberculosis, and the condition of the kidneys. At this visit blood should be withdrawn for a Wassermann test, should anything in the physical examination or the previous history of the patient indicate its necessity.

If everything is apparently normal, and the patient desires it, she should be tentatively registered as an outdoor patient, to be eventually delivered in her own home; otherwise, she should be registered as a prospective hospital patient.

In either event she should be instructed to report to the dispensary at stated intervals as long as she remains well, and to bring a specimen of urine at each visit. She should also be given a card containing concise directions concerning the hygiene of pregnancy, and mentioning the important untoward symptoms which might supervene. Should such be noted she should report at once.

At the first visit to the dispensary, the prenatal nurse should arrange to call on the patient at her own home within the week. At this visit she should make a social survey of the surroundings, and determine whether the patient is a proper object for charitable care. If the surroundings are not suitable, the patient should be persuaded to enter the hospital for delivery. The nurse should also amplify the printed directions concerning the hygiene of pregnancy, and impress the woman with the necessity of suckling her baby.

After this initial visit, an important part of the duties of the nurse is to keep track of the patient by means of a card index, and in case she does not return to the dispensary within one week of the appointed time, to visit her again in order to ascertain why she failed to keep the engagement.

Every patient should return to the dispensary for a final examination one month before the expected date of confinement, and the decision as to whether she is to be delivered in the hospital or in her own home will in great part depend on the findings at that time. In the latter event she should be visited again by the prenatal nurse in order to ascertain whether the necessary arrangements have been made for the approaching confinement. Ordinarily, further visits will not be necessary until after the child is born, but a visit should be made just after the student and postpartum nurse cease their visits. This is necessary partly to check up the work of the outdoor service, but principally to put the patient and her baby in touch with the children's clinic with instructions to take the baby to it should necessity arise, and on returning to the hospital the nurse should register the child at the children's clinic or with the "milk fund" nurse so that it can be followed up by the proper agencies.

In the case of patients entering the hospital for delivery, the prenatal nurse's work usually ceases with the visit made one month before delivery, as the subsequent supervision will devolve on the nursing staff of the hospital. On the day before the discharge, the mother and baby should be taken to the children's clinic for registration, so that the baby may be under its supervision for the next year.

Prenatal care does not necessarily end here, as it has to take thought of what may happen in future pregnancies, as well as of the preservation of the general health of the mother. Consequently, when the existence of syphilis is not discovered until after the birth of the child, a mechanism should be developed which will ensure proper treatment, either under the auspices of the obstetric service or in some special department of the hospital. To bring this about without unnecessarily going into details concerning the disease will often require great tact, and will tax the resources of many nurses. Furthermore, when patients are discharged with conditions ultimately requiring operative treatment, but which could not be undertaken during their stay in the lying-in ward, an attempt should be made to see that they ultimately return to the obstetric department or to some other department of the hospital for the necessary operation, both for their own sake and for that of their unborn children.

CONCLUSION

I hope that by this brief outline and by my figures I have been able to make clear how complicated prenatal care is and how inextricably it is connected with the work of the obstetric hospital. It is not merely a matter of a few visits by a nurse to the patient in her own home, but should consist in the coordination of the medical, nursing and social service resources of the hospital in the effort to obtain such treatment and supervision for the mother as will offer the greatest possible guarantee for the safe delivery of a normal child, which can be kept healthy by maternal nursing.

VALUE OF HYDROTHERAPY IN UROLOGY *

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The object of this paper is to call attention to the valuable therapeutic effects which can be secured by a more general and systematic use of hydriatic procedures. It is no new remedy. Hydrotherapy, both internal and external, has been known and employed throughout the ages, but it does not occupy that large sphere of usefulness which its merits justify, because its advantages are not fully appreciated.

Historically we find records of its use in the early literature of Assyria, Egypt and China. It was extensively developed and used by the Greeks and Romans, who originated the hot air and vapor baths. Hippocrates' writings revealed his quite perfect knowledge of the therapeutic action of certain hot and cold applications. His explanation of their physiologic action is strong testimony to his great wisdom, for it agrees in the main with the facts which we hold to-day, that have been established by extensive experimentation.

In every age certain men, as Asclepiad, Kneipp, Pliny, Presnitz and others, have arisen in different places, extolling the great advantage of water as a remedial agent. Empiric as their knowledge must have been, they added their part to our present system, which has been so well established on a rational and scientific basis by the hard work of many scientific men.

Recent studies in immunity have taught us the wonderful inherent power of the blood and blood-

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forming organs in combating infections, and have demonstrated the actual warfare which takes place between the forces of the host and those of the invader. Victory for the host is effected because of the supremacy of its forces over those of the invader. The purpose of any therapeutic remedy should be to assist Nature in her combat by facilitating the circulation and the mobilization of her forces. To be of the greatest value a remedy must not only be directed toward the relief of the symptoms, as pain, but it must at the same time arouse and aid Nature's forces to remove the cause. To accomplish this there is no agent more effective, and whose actions can be more definitely directed, than well-established hydriatic procedures. Not only the amount of blood going to any organ can be definitely increased or diminished, as may be desired, but its character can be improved and altered by the different applications. It is the most potent therapeutic agent known to stimulate the active forces of blood and circulation, proper applications increasing the blood-cells, stimulating their activity, and increasing the blood alkalinity.

Before discussing specific applications it will be valuable to consider a few of the salient principles involved in the action of water on the system, which can be best reviewed by studying: (1) the effects of cold, (2) the effects of heat, and (3) the mechanical or reflex effects.

EFFECTS OF COLD

The primary or intrinsic effect of cold is that of a vital depressant. This is well illustrated by conditions accompanying prolonged exposure to cold. There is slowing of pulse and respirations; the nerves become benumbed; body temperature lowered; and glandular secretions diminished. The degree of effect produced depends on the temperature and duration of exposure. The immediate effect of cold is the depression of activities of the structures in direct contact. The vessels of the skin are contracted, and the blood driven into the larger internal vessels, producing a local anemia and internal hyperemia. If the exposure is of short duration there is a reaction with opposite effects. The skin now glows, and becomes warm. There is a tonic dilatation of surface vessels with resulting hyperemia; increased pulse and respiratory rate, rise of temperature, and stimulated secretions. This phenomenon is due to the reaction or secondary effect of cold which is tonic in nature.

If the exposure to cold is prolonged its depressive effects become more pronounced, and the contraction of surface vessels and the general depression continue. Excessive blood is forced into the deeper organs, as kidneys and other glands, except those of muscular structure. (The contractions of the muscle fibers decrease the size of these organs, and cause an expulsion of their congested blood.) The sensory nerves being subjected to the prolonged exposure of the powerful thermic impulses produced by the cold become exhausted, and the pronounced reaction which follows the short application is not produced, and the primary effect of the cold continues following the application, sometimes for two or more hours.

Effects on Blood.—The effect of cold on the blood is striking. Winternitz reports an increase of 1,860,000 cells after an application of cold. White corpuscles increased up to 300 per cent. Kellogg[1] demonstrated temporary increase of 500,000 red cells, 5,200 white cells and 3 per cent. hemoglobin, following a hot and cold application. Baruch's experiments showed an increase of 1 to 2 per cent. following cold sprays and other applications. Henocque showed that hot and cold applications increased the rate of reduction of oxyhemoglobin. Strasser showed that general cold applications increased the blood alkalinity, increased the amount of urea, uric acid, ammonia, earthy phosphates, and xanthin bases, which demonstrates the powerful stimulating tonic effects of short cold applications. Fleury demonstrated with his experiments with belladonna that intestinal absorption was greatly accelerated by cold application. Short applications of cold increase heat elimination by the reaction following it, favoring perspiration. Prolonged and very cold applications produce congestion of the kidneys, which may continue even to the extent of producing albuminuria. *Cool* (not prolonged very cold) baths decidedly increase the amount and density of urine eliminated. The toxicity of the urine in fever cases, treated by cool baths, has been demonstrated to be increased sixfold. Cold lowers both surface and internal temperature. Fleury records a lowering of body temperature 7 degrees by cold baths. There is a greater change in fever than in normal cases, and it is greatly enhanced by friction. Cold lowers temperature by direct absorption of heat. Prolonged cold applications lessen the power of reaction by exhausting the sensory nerves, and lessen the heat production by exhausting the heat producing centers, so that the temperature may remain lowered for several hours before the body can react and be returned to normal.

PHYSIOLOGIC EFFECT OF HEAT

Heat is a vital stimulant. This is well demonstrated by noticing the vivifying influences of warmth from a fire after prolonged exposure to cold. The effects of heat applied differ with the temperature, duration and mode of application. Currie says that the first effect of moderate heat is to produce a local hyperemia of the tissues by stimulating the vasodilators. While moderate heat relaxes the surface vessels, very hot applications cause a primary contraction of the vessels in the skin. With applications of short duration the vasoconstriction is soon replaced by a vasodilatation and there is a temporary contraction of the internal vessels coincident with the contraction of surface vessels, which is soon followed by a relaxation. This relaxation of the surface vessels, permitting the blood to circulate freely in the skin, is a powerful derivative measure in relieving the congestion of deeper parts. Applications of warm water stimulate the vasodilators, while very hot applications temporarily stimulate the vasoconstrictors.

Experiments have been performed which show the marked effects which the applications of heat have on the vital organs. Winternitz showed that following a hot bath there was a decrease in the blood-cells, a greater reduction being noticed in the whites than in the reds. Strasser showed that general applications increase the acidity of the blood, by increasing the acid-phosphate content. Magiori demonstrated the muscular activity to be greatly reduced by the effect of heat. Kellogg showed that following an immersion bath of 112 degrees for twelve minutes the strength, as determined by the universal dynamometer, dropped from 6,480 pounds to 5,415 pounds, a loss of 1,065 pounds, or 16 per cent. Heat first slows, then increases the pulse, diminishes blood-

1. Kellogg: Rational Hydrotherapy.

pressure, increases metabolism by raising the body temperature, thus increasing the elimination of urea. Short applications of heat are nervous excitants. If this stimulating or exciting effect is prolonged it exhausts the stored nervous energy, very much as a continuous contact of the circuit of a dry cell soon exhausts it. Neutral applications are soothing, producing their sedative effects by protecting sensory nerves from external thermic stimulation.

REACTION EFFECTS

The phenomena of reaction manifestations following application of heat or cold have been carefully worked out by the experiments of Schuller, Goltz, Naumann and others, who have demonstrated it to take place directly through the nerves. Thermic stimuli producing afferent impulses are carried to the caloric centers, from which efferent impulses are modified and transmitted over the sympathetic, affecting the vasoconstrictors or vasodilators. The reaction effect is opposite from the action and is the result of the efforts of the organism to resist any external interference with the normal temperature. It is well illustrated by the change accompanying a cold bath. The direct action is to chill and blanch the skin by contracting surface vessels, slowing of pulse and respiration, and increasing blood-pressure, whereas the reaction is essentially opposite, reddening and warming of the skin vessels, increased pulse and respiratory rate and general feeling of well being. The primary effect of short heat and reaction from short cold are tonic, while the primary effect of cold and reaction from hot are atonic. The end result of any application depends on the reaction, and to be effective the treatment must be directed with this object in view, and so applied as to obtain it.

REFLEX ACTION

Another important factor in the action of hydriatic measures is reflex action. All the internal organs are reflexly connected with some external surface. This is well illustrated by the perceptible effect on the bladder of applications of cold to the hands or feet, and on the uterus by applications to the breast. These various areas have all been carefully worked out and a knowledge of them is essential in prescribing hydrotherapy. By utilizing them more decided results can be obtained by fluxion effects. For example, hot blanket packs relieve congestion in the kidneys by diverting blood into the skin. An ice bag over the lower third of the sternum, the reflex area for the kidneys, simultaneously applied, doubles the action of the pack by reflexly contracting the vessels of the kidney; thus is produced a pulling and pushing effect.

APPLICATIONS OF SPECIAL VALUE IN UROLOGY

As in every branch of medicine, our treatment must possess a twofold function, one directed to the local condition, the other to the upbuilding of the patient's general resistance. We are apt to be too reliant on our aggressive measures and not sufficiently consider the advantages of increasing the defensive powers of the body. Much can be accomplished in combating local infections by relieving congestion and producing a more active circulation of blood, richer in leukocytes. The local accumulation of toxins is prevented by their being more rapidly carried away to the glands and organs of elimination, thus preventing their inhibitory effect on the phagocytic action of the leukocytes. Frequent applications of short hot and cold, either as fomentations and cold compresses or immersions in alternate hot and cold, constitutes a valuable adjunct to any treatment in combating infections. Cases of acute specific urethritis experience relief and more speedy cure by immersing the organ in alternate hot and cold water several times a day, as an adjunct to regular treatment. Perhaps the most frequently prescribed hydriatic measure by urologists is the sitz. My experience has demonstrated to me that we do not get the results to be obtained from this very valuable measure when proper technic is not followed. The marked analgesic effect of a hot sitz is responsible for our ordering its use so frequently. Patients, when taking their own treatment, find the relief so gratifying that they remain in it too long, which results in an atonic reaction following, that is more or less debilitating to the defensive properties of the blood, and the value of the measure is thus thwarted. When used for its analgesic properties for calculus colic, this relaxed effect is desirable, but not so in combating chronic congestions or infections. The best effect is obtained from a short hot sitz, from 115 to 120 F. for five to eight minutes, followed by a short cold dip or effusion, the reaction of which prolongs the primary tonic effect of the heat, by producing a tonic dilatation of the peripheral vessels, and a more active circulation. A hot sitz should always be followed by a cold sitz when treating chronic infections. For this reason sitz tubs in hospitals and institutions should be arranged in pairs in order to facilitate taking alternate hot and cold applications. In private homes, the effect can be obtained in a measure by gradually cooling the water or dashing cold on the parts from a bucket. In cases of chronic infections, the advantage of such a bath is greatly augmented by preceding it with alternate hot and cold sprays and ascending perineal douches.

I wish particularly to emphasize the value of the prolonged cold sitz. My attention was attracted to its virtue by its extensive use among the gynecologists, who use it so effectively in the palliative treatment of uterine fibroid, with chronic congestion accompanied by menorrhagia. They have demonstrated by experience that the reaction following short cold sitz baths increases the circulation in the uterus, which aggravates the menorrhagia, but prolonged (from twenty to thirty minutes at 60 to 70 F.), produces continued contraction of the pelvic and abdominal viscera, with a relief of congestion following. The prolonged active stimulation of the vasomotors exhausts them, thus losing their power to react, so that the primary effect of the cold is continued after the bath. Much of the benefit derived by the patient from this measure is due to the contraction and tone to relaxed intestinal viscera, which noticeably increases their activity and thus stimulates nutrition and intestinal elimination. This measure has proved very valuable to me in the palliative treatment of prostatic hypertrophies with congestion, malignant growths with hemorrhages, atonic dilated bladders (especially following prostatectomies) and in sexual debility.

Care must be exercised in the beginning of its use. Weak and debilitated patients should not be given the prolonged very cold bath until their ability to react is established, which can be done by gradually from day to day reducing the temperature and extending the time. Thus "tolerance" is established. Reaction can be greatly facilitated by a simultaneous hot foot bath, and especially by vigorous friction to parts

immersed. Chilling can be prevented by protection of the shoulders with flannel. The cold sitz should be preceded by a hot rectal irrigation, and followed by a spray. It is positively contra-indicated in all cases of vesical tenesmus.

The neutral sitz, taken with water at 92 to 95 F. for from fifteen to thirty minutes is very valuable, because of its soothing and sedative effect in all irritable conditions, accompanied by priapisms, erotomania, etc.

Another useful measure to me, which can be utilized by patients at home, is the heating pelvic pack. It consists of a piece of linen, flannel and mackintosh, shaped and applied like an infant's napkin. It is used as a heating compress to any other part by wringing the linen out of ice water and applying next to the skin, covered by flannel and mackintosh. Its action is that of a heating pack, producing dilatation of superficial vessels, with relief of internal congestions. It possesses a decided value in the relief of pain and for activating the circulation in cases of cystitis, prostatitis, epididymitis, etc. It is a valuable after-treatment following a sitz or hot fomentation, and is best employed at night. Its ease of application and value commends it to a more general use.

The value of the ice bag, fomentation, pyscrophore, and numerous other local measures of merit can only be mentioned.

General derivative and eliminative measures, as packs and electric light baths, and tonic measures, as hot and cold applications to the spine, salt glows and general hot and cold sprays, deserve special mention. They are valuable in stimulating general vital tone. With their proper use, weak, anemic and debilitated patients, who may be suffering from some condition demanding radical treatment, and unable to stand it, can be built up and prepared for it.

Treatments consisting of combinations of these applications, graduated as the patient's ability to react indicates, are effective in all cases of acute and chronic infections. Patients feel the boost and stimulating effect of each treatment, which gradually increases their natural offensive and defensive powers. Especially in tuberculous infections, used together with proper hygiene, vaccines, etc., suitable tonic hydriatic applications possess especial merit in raising the opsonic index, besides affording most grateful relief of painful symptoms.

Nothing can be more essential to a patient about to have an operation involving the urinary tract, than to have his blood pure and free from toxins and his skin and elimination active, to increase which no measure approaches in value suitable hydriatic applications, and I predict that the time will be when hospitals and all surgical institutions will be equipped to give surgical cases hydriatic training to put the patients in the best possible condition for operation. If more attention is given to the circulation and activity of the skin prior to operation, there will be fewer cases of renal failure following surgical procedures.

The routine use of the hip and leg pack followed by cold-mitten friction after surgical procedures is a valuable measure to abort shock and pulmonary congestions. These are conveniently given by the use of the electric thermaphore pack, which is placed on the bed and the current turned on before the patient returns from the operating room. The patient is thus put at once in a warm pack, which is folded around the legs and hips and heated by the electric current for ten or twelve minutes. A cold-mitten rub completes the treatment.

The technic of these applications is an important feature and essential to their successful results, but the extensiveness of the subject necessitates referring the reader to standard text-books on the subject. If I have succeeded in calling attention to the fact that hydrotherapy is a definite science, that elaborate indications have been developed, which are based on a sound physiologic foundation, and that it is not an empiric measure to be used in a haphazard way, I am thankful and I can assure you that time spent in becoming more acquainted with the great resources of hydrotherapy will place in your hands many useful measures in combating disease.

ABSTRACT OF DISCUSSION

DR. D. MILLER BARR, Atlantic City: I have had a large experience in this direction. In 1883 I had a patient with chronic rheumatism, a tall man, strong, energetic, but I could not control the condition. I at that time opened a sanatorium employing hydriatic appliances. In 1884 I gave this patient a Russian bath every morning and a Turkish bath every evening. In two days he threw away his cane, gained two pounds a day for two weeks, and went home well. I do not know whether you have observed that there are two batteries at work in the system. There is a faradic battery which sends impulses to the muscles and which is subject to the will. Now these muscles must be exercised in order to keep up their strength, and this battery needs rest—eight hours out of every twenty-four. The galvanic battery is that battery which commences before birth and keeps up a continuous action until death. It acts on the heart and lungs and the general organs of the system. It is not subject to the will. I believe we have a definite way of stimulating, exercising and differentiating the work of this galvanic battery, the battery which supplies the organs of the body with vitality. This weakens like any other ordinary battery at times and this method of treatment stimulates it, causes additional vibration and action, and thereby accomplishes the wonderful and desirable effects which are described in the paper.

THE PRACTICAL VALUE OF CHEMICAL TESTS OF RENAL FUNCTION IN SURGICAL CONDITIONS OF THE URINARY TRACT*

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The practical value of an estimation of renal function by means of chemical tests has not as yet been definitely determined. Medical literature during the past decade has been replete with articles concerning this subject. With the advent of each of the various functional tests, it was believed that the means had been discovered whereby an exact estimate of renal function was possible. In 1909 the use of phenolsulphonephthalein as a renal functional test was advanced by Rowntree and Geraghty, who asserted that in its use many of the objectionable features of other tests had been overcome. Since then many articles have appeared, largely corroborative of the assertions of

* From the Mayo Clinic.
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Rowntree and Geraghty. As a result, the general impression now in this country is that an estimation of renal function by means of chemical tests is necessary before any surgical procedure can safely be made in the urinary tract.

In our experience phenolsulphonephthalein undoubtedly embodies many of the virtues which the various other tests lack. Since phenolsulphonephthalein is also representative of the underlying fallacies common to all functional tests, its use will be illustrative of the practical value of such tests. In an effort to determine its practical value when applied to surgical conditions of the urinary tract, we have employed it in 612 cases. In the review of these tests, they have been studied in regard to their value when applied to the following conditions: 1. For the purpose of determining the efficiency of the remaining kidney. 2. The estimation of renal functional capacity in cases of urinary obstruction. 3. As an aid to the diagnosis of doubtful lesions of the kidney.

In the literature on the subject of renal functional tests the statement is frequently made that the greatest danger in renal surgery is insufficiency of the other kidney. Rowntree, in a recent article, says, "Uremia after operation has been responsible for a large proportion of the mortality in surgical cases." This observation, however, has never been proved by an extensive survey of a large series of operated cases. Of the 485 patients on whom nephrectomy was performed at the Mayo Clinic during the past five years (June 1, 1909, to June 1, 1914), nineteen died as the result of the operation. A review of the post-mortem findings in these cases showed that renal insufficiency was the cause of death in but one case in which a complete cystoscopic examination was made prior to operation. In this patient a nephrectomy had been made for unilateral renal tuberculosis. Although the clinical symptoms prior to operation were suggestive of renal insufficiency, the operation was made for relief of acute pain referred to the affected kidney. In two other cases the remaining kidney was insufficient because of tuberculous infection. Because of difficulties in cystoscopic technic, neither of these kidneys could be catheterized. In one of these cases the combined phenolsulphonephthalein output in two hours was 38 per cent. prior to operation. A review of the necropsy data would lead us to believe that the cause of death following renal surgery will more often be the result of infections and possible errors in surgical technic than of insufficiency of the remaining kidney.

It is a well-known fact that when one kidney is diseased the functional activity of the other kidney may be temporarily reduced. The degree of reduction may be so marked as to suggest an actual lesion. The degree of functional reduction, however, is not necessarily commensurate with the extent of actual destruction of tissue. The fundamental weakness of all renal functional tests as an aid to prognosis is that while they may show the degree of functional activity at the time of examination, one cannot determine from them what the functional capacity may be when the existing pathologic conditions are corrected. It has been our experience that the fundamental surgical principles and the clinical data, including a careful cystoscopic examination, are to be relied on in determining whether or not a patient should be operated on. In other words, if a surgical condition is present in one kidney, operation is indicated provided there is a fair amount of normal urine in the catheterized specimen of the other side and that the patient does not give evidence of the well-known clinical symptoms of renal insufficiency.

URINARY OBSTRUCTION

We have employed the phenolsulphonephthalein test in 168 cases of prostatic hypertrophy. In the majority of cases the test was repeated at regular intervals in order to note the degree of comparative progress. It has been asserted that with a persistent low output of phenolsulphonephthalein in spite of treatment we have evidence of renal insufficiency which would contraindicate operation. While it would probably be impossible to set any arbitrary percentage as the operative danger line, it is generally understood that a 20 per cent. return in two hours might be so regarded. Our series includes eleven patients operated on with an output of less than 20 per cent., all of whom had repeated examinations and long-continued treatment. Of these eleven patients, but one died, evidently from cardiac rather than renal insufficiency. In two patients, even after months of treatment, the return in two hours was so slight as to be scarcely measureable and yet both made uneventful recoveries, one of whom two years afterward is reported in excellent health. On the other hand, two patients with a phenolsulphonephthalein output of 30 and 45 per cent., respectively, after treatment of the bladder died with clinical symptoms of uremia, and several patients with an output of over 40 per cent. prior to operation developed uremic symptoms after prostatectomy but finally recovered.

Two patients, with a phenolsulphonephthalein output of over 75 per cent. in two hours, died following operation. One patient died with clinical evidence of uremia and a pathologic diagnosis of nephritis, largely glomerular, in both kidneys. The other patient died with evident cardiac dilatation, and the pathologic examination of both kidneys showed a chronic parenchymatous nephritis.

It has been asserted that successive tests are necessary to establish the functional capacity and that only when the amount of dye secreted increases progressively is the efficiency of renal function established. In the ten patients operated on with an output of less than 20 per cent., the amount remained practically stationary throughout treatment. In several cases, the secretion had been around 20 per cent. after the first reaction to treatment, then rose to 30 per cent., but dropped to 20 per cent. or even less prior to operation. We have concluded that although the amount secreted usually increases after drainage and treatment of the bladder, a stationary or even decreasing output should not influence the prognosis, provided the patient's general condition is improving.

Of interest is a review of the specific gravity of the urine. While as a general rule a drop in specific gravity was accompanied by a drop in the phenolsulphonephthalein output, there was no certain degree of parallelism between the two tests. Thus of sixty-three patients in whom the phenolsulphonephthalein output was over 50 per cent., in thirty-two the specific gravity remained lower than 1.010. On the other hand, of the eleven cases with less than 20 per cent. phenolsulphonephthalein output, nine had a specific gravity of less than 1.008.

We believe, however, that the clinical evidence of renal insufficiency after the usual course of treatment is of greater importance than any functional tests, and should determine whether or not prostatectomy is indicated. That we are correct in our observation is

proved by the fact that recently a series of ninety-seven prostatectomies was performed at the Mayo Clinic without a death.

Probably the greatest value of the functional test will be as an aid to the diagnosis of doubtful lesions of the kidney. For this purpose, phenolsulphonephthalein is admirably adapted. The presence of a marked diminution of dye-secretion on one side should be regarded as indicative of the existence of some pathologic lesion. Its absence, however, will not exclude the possibility of the existence of a lesion. Unfortunately, technical difficulties accompanying ureteral catheterization are frequently the cause of error in the functional estimate, and in order to corroborate the findings it may be necessary that the patient undergo repeated examinations. Slight differences in the functional output between the two kidneys are not of much practical value. To be of much diagnostic significance, the comparative difference in the functional output must be marked. The phenolsulphonephthalein test is frequently of considerable value when applied in the diagnosis of renal lithiasis, ureteral lithiasis, hydronephrosis, renal tumor, renal tuberculosis, renal infection, bilateral cystic kidney, essential hematuria and atrophic kidney.

RENAL STONE

When stone is present in a kidney, a comparative diminution in the functional output will be found in the majority of cases. It will be found in practically every case in which the stone is of considerable size and there is marked destruction of renal tissue. It will frequently happen, however, when the stone is small and when there is little or no infection, that the diminution in secretion will not be enough to be of diagnostic value. Since shadows in the roentgenogram of stones of this type particularly require identification, the practical value of the functional test as an aid to their identification will be found to be limited. The absence of any diminution of dye-secretion, therefore, will not exclude the possibility of a stone being present.

The degree of diminution of the phenolsulphonephthalein output will not be found to be commensurate with the degree of destruction of renal tissue. As a rule, the degree of diminution in functional output will be much greater than the actual destruction of tissue. Thus in several recent cases of stone in the kidney, the functional output of the affected kidney was but 1 or 2 per cent. in fifteen minutes, while in the other kidney it amounted to 10 or 15 per cent. At operation, the affected kidney was found to be practically normal. Following the removal of the stone, the renal function returned to normal. From this it must be inferred that the reflex irritation from stone will frequently be the cause of temporary diminution in renal secretion.

With bilateral nephrolithiasis, the test may be of value in determining the comparative degree of renal obstruction. If but a trace of the dye returns from one kidney, the destruction of tissue has probably progressed to such a degree that nephrectomy usually is indicated—a particularly valuable procedure when the urine is not markedly purulent. In one case, however, of bilateral nephrolithiasis, the same amount of dye was secreted from both sides. At operation, one kidney was found to be so much destroyed that nephrectomy was necessary, while the other was in comparatively good condition. If, with bilateral nephrolithiasis, but a trace of phenolsulphonephthalein is present in the combined urine two hours after injection, the advisability of operation would be questionable. Two such patients came under our observation. In one, operation was refused because of clinical evidence of renal insufficiency and toxemia. The other was operated on and was reported alive six months later.

STONE IN THE URETER

Marked diminution in phenolsulphonephthalein secretion on the side of a doubtful ureteral shadow would indicate that the shadow in question was intraureteral. Unless there is considerable dilatation of the renal pelvis, or infection as a result of stone in the ureter, marked diminution will not usually be found. As with renal lithiasis, stones in the ureter giving doubtful shadows in the roentgenogram are usually small and more often cause but little dilatation or infection in the kidney. Consequently, diagnostic diminution in secretion will be found of practical value in but a small proportion of ureteral stones. An equal comparative function, however, would not exclude the possibility of stone in the ureter. In eight cases of stone in the ureter in which the secretion of the urine was not interfered with and the roentgenographic and cystoscopic evidence was doubtful, positive diminution in comparative secretion was found in two cases.

HYDRONEPHROSIS

With hydronephrosis of any considerable size, a marked diminution of function occurs. This is to be explained partially by the fact that the retained fluid in the sac may dilute the dye secreted to such a degree as to give the impression that the secretion is diminished. It will frequently be quite impossible to remove all the retained fluid by means of the catheter so that the functional test will have but little exact value in estimating the degree of renal destruction. As with lithiasis, the degree of tissue-destruction is not parallel with the degree of diminution of functional output. With a very small hydronephrosis, however, in which a functional test might be of practical value, but little difference in secretion may be found in the two kidneys since the parenchyma is usually but slightly involved.

RENAL TUMOR

When the classical symptoms of hematuria, pain and tumor are present, and a thorough cystoscopic examination is possible, the condition of renal tumor can usually be readily recognized. Renal neoplasm, however, will frequently occur without any urinary symptoms, and examination of the urine catheterized from both kidneys may be found to be normal. In such cases, a marked diminution of the amount of dye secreted by the side in which the tumor in question is situated would suggest its intrarenal nature. In twenty-nine cases of renal neoplasm in which the phenolsulphonephthalein was employed, marked diminution was found in nine. With infected neoplasm, the proportion of kidneys with tumors showing a diminution in secretion would be greater. However, the cystoscopic evidence of infection from the side of the tumor would usually render a diagnostic functional test unnecessary.

ESSENTIAL HEMATURIA

In the fourteen cases of essential hematuria in which the phenolsulphonephthalein test was successfully employed, no marked comparative diminution of dye-secretion from the hemorrhagic kidney was noted. If there is any diminution of dye-secretion in the kidney from which the hemorrhagic urine is secreted, some

condition other than the so-called essential hematuria is present and surgical exploration is indicated. The other conditions which may cause hematuria can usually be ascertained by the various other means of investigation at our command. Nevertheless, the method will not infrequently be applicable in the differential diagnosis of hematuria accompanying the following conditions: (1) renal tuberculosis of the hemorrhagic type without other clinical or cystoscopic evidence; (2) renal neoplasm which causes no recognizable tumor; (3) renal stone with negative Roentgenray findings, and (4) chronic pyelonephritis. It must, however, be remembered that any one of these conditions may be present even though no marked diminution in function is apparent. The technical difficulties accompanying ureteral catheterization as the result of marked hematuria will frequently render the comparative functional estimate unsatisfactory.

ATROPHIC KIDNEY

The only condition in which an estimate of the secretory capacity of the kidney by means of cystoscopic inspection and ureteral catheterization might be incorrect would be with an atrophic renal condition as Geraghty has demonstrated. Atrophy of the renal substance to a variable degree is not an uncommon condition. In a series of eighty-one kidneys removed at post-mortem and at operation which showed a variable degree of atrophy, Simpson of the Mayo Clinic found that the condition was due to inflammatory changes in practically every case. Atrophy of the kidney which could not be accounted for by secondary inflammatory change was not found in this series. When a cystoscopic examination was made, attention was usually called to the condition by the absence or marked diminution in amount of the secretion or by the gross character of the urine secreted from the affected kidney. In two cases in which a surgical condition was present in one kidney, a clinical diagnosis of insufficiency of the other kidney was made from very apparent clinical evidence of renal insufficiency. This leads us to believe that a condition of atrophy in a kidney to a degree that it will not sustain life, when the only evidence of its existence can be ascertained by demonstrating that but a trace of the injected dye returns, while possible, must be exceedingly rare. With a surgical kidney on one side and a markedly atrophic kidney on the other, the clinical evidence of renal insufficiency alone will usually render the case inoperable. Data ascertained through cystoscopic examination will, with rare exceptions, give us the necessary corroboratory evidence. That we are correct in our premises is proved by the fact that among the 485 cases in which nephrectomy was done, atrophic kidney was never found as the cause of death.

RENAL INFECTION

Geraghty has called our attention to the fact that the phenolsulphonephthalein test is frequently of practical value in differentiating between an infection largely involving the renal pelvis and one which affects the renal parenchyma to a marked degree. Occasionally, an infection with a low functional return will become practically normal after treatment. With bilateral pyelonephritis, however, the phenolsulphonephthalein output will frequently remain practically normal, and still the patient may give unmistakable clinical evidence of renal insufficiency. Two patients were observed with a bilateral colon infection in whom the first phenolsulphonephthalein output in two hours was 13 and 15 per cent., respectively. After treatment, the infection was greatly reduced and, with the improvement of clinical symptoms, the phenolsulphonephthalein increased to 36 and 45 per cent. With bilateral pyelonephritis, a marked diminution in phenolsulphonephthalein secretion from one kidney would indicate considerable destruction of kidney tissue. With hematogenous septic nephritis, marked diminution from the kidney affected should be expected. It was found markedely diminished in one case in which it was tried.

RENAL TUBERCULOSIS

With early tuberculosis where the tubercle bacilli have been demonstrated in the mixed urine and where cystoscopic examination and ureteral catheterization are unable to localize the disease, a marked comparative diminution of phenolsulphonephthalein on one side should localize the disease to that kidney. In one case which came under our observation, however, in which a circumscribed tuberculous process was present in the kidney, the difference in secretion between the two kidneys was practically negative. When because of technical difficulties it is impossible to catheterize only the diseased kidney and the character of the secretion from the other side cannot be determined, as not infrequently happens in a tuberculous bladder, if the combined phenolsulphonephthalein is over 40 per cent., one might usually infer that the other kidney is healthy. We have observed, however, one case of well-advanced bilateral tuberculosis in which the combined phenolsulphonephthalein output was 66 per cent. in two hours. On the other hand, we have noted several cases of unilateral tuberculosis in which the combined phenolsulphonephthalein secretion in two hours was between 25 and 35 per cent. prior to operation. Following nephrectomy, the patients made uneventful and complete recoveries, and in one case the function rose to 60 per cent. three months after operation. It has been declared that the phenolsulphonephthalein test is of considerable value in cases of bilateral tuberculosis when it is impossible to determine from the character of the secretion which of the two kidneys is more diseased. Removal of a tuberculous kidney in bilateral tuberculosis is indicated, as a rule, only when one kidney is practically destroyed and the other slightly involved. It has been our experience that if on cystoscopic examination one is unable to determine from the character of the urine secreted which of the two kidneys is largely destroyed, operation is contra-indicated.

PERINEPHRITIC ABSCESS

Marked comparative reduction in function may be the only evidence present to identify the origin of a mass palpable in the perirenal area. Perinephritic abscess of renal cortical origin may be present without any pathologic evidence in the usual examination of the urine. Marked diminution in secretion of phthalein was noted in two cases of perinephritic abscess where the catheterized urine was negative save for an occasional pus cell. In one case, however, there was no appreciable diminution present. From this it may be inferred that a perinephritic abscess may be of renal origin in spite of equal functional output.

POLYCYSTIC KIDNEY

A marked diminution in phenolsulphonephthalein secretion occurs with polycystic kidneys only when the destruction of renal tissue has advanced to a consider-

able degree. When the disease is well advanced, clinical evidence of renal insufficiency is usually manifest. In seven cases of polycystic kidney, a phenolsulphonephthalein secretion of less than 40 per cent. occurred in but two cases. In two cases a comparative reduction in phenolsulphonephthalein excretion proved to be of considerable value, however, in determining in which of the two kidneys the greater degree of destruction had taken place. This may not always be ascertained by the comparative amount or character of the urine collected from the individual kidneys.

CONCLUSION

We should like to emphasize that it is not our purpose to belittle Geraghty and Rowntree in their thoroughly scientific efforts to establish a chemical estimate of renal function. The phenolsulphonephthalein test, because of the ease of application and rapidity of secretion, remains as probably the best functional test at our command. Nor is it our purpose to detract from the value of a careful examination of the character of ureteral secretion in surgical conditions of the upper urinary tract. It is our contention, however, that the fundamental surgical principles and clinical data should determine whether or not an operation is indicated; and that renal functional tests are of practical value largely as an aid to differential diagnosis and only to a limited degree as a prognostic aid.

ABSTRACT OF DISCUSSION

Dr. John T. Geraghty, Baltimore: I fully endorse Dr. Braasch's view that functional tests should not be employed to the exclusion of all other methods. The employment of functional tests cannot give us the diagnosis of itself, nor always the prognosis. When taken in conjunction with the data obtained from careful clinical examination, however, they furnish information which is valuable and frequently not obtainable in any other manner. We have never attempted to draw a line beyond which one should not operate, but when we find, in cases of enlarged prostate, a very low renal function as indicated by phthalein, every effort is made by careful preliminary treatment to improve the functional condition of the kidney before operation is undertaken. At the present time we employ two tests; the phthalein for the estimation of the excretory function of the kidney and, when this is found to be very low, an estimation of the blood-urea is also made. When the phthalein is high and the excretory capacity of the kidney good, there is no necessity of doing a blood-urea because this will be practically always normal. Given a patient with a very low phthalein excretion and a high retention of non-protein nitrogen, his condition can be considered critical regardless of the clinical appearance, and such a patient is a bad operative risk. A knowledge of the renal function is of value not only because it enables us to select the most favorable time for operation so far as the kidney condition is concerned, but it frequently influences us in the method of procedure and in the choice of anesthesia.

Dr. B. A. Thomas, Philadelphia: I concur most heartily in what Dr. Geraghty has said. I would also call attention to the fact that we should not blame the functional kidney-tests for errors in surgical practice that may occur and also for not carrying out the best postoperative technic. I have felt for a number of years that the simple total quantitative output by a patient on any particular day was not to be viewed with entire satisfaction with respect to the operability of the case. Consequently I believe that, practically without exception, for the surgeon who wants to get a line on the kidney function, whether bilateral, unilateral or total, the indigocarmin test is a serviceable one and one in which the deductions are immediate (chromo-ureteroscopy), concise and reliable. If, however, it be advisable for any particular reason to supplement chromo-ureteroscopy with more extended observations, I believe that, in order to determine the stability of the kidney function and in order to determine whether or not the patient is gradually improving and reaching an operable condition from one which was inoperable at the time of his admission to the hospital, greater reliance can be placed on the method to which I previously called attention, namely, the index of elimination. The index can be applied not only to indigocarmin, but to any substance used in the capacity of a functional kidney-test. If the kidneys are diseased the onset will be delayed, the amount eliminated in the first hour will be diminished, and consequently the relative output for the succeeding hours will be increased. Therefore, if we compute the index of elimination by a study of the third hour as compared with the first hour, we will arrive at a means by which the stability of the kidney function can be determined, and improvement in the course of the case with respect to operability can be determined. If the output of the third hour equals or exceeds that for the first hour—unless the total amount exceeds 20 per cent. for the three hours—that case must be viewed with concern by the conscientious surgeon, with respect to its operability.

Dr. George G. Smith, Boston: If I understood Dr. Braasch correctly, he said that in certain cases the healthy kidney will have a reduced function because of the toxins from the other. Has Dr. Braasch noted definitely that this occurred in any considerable number of cases? Because in the experience which I have had (a great deal less than his, it is true) I have not seen, or have not recognized it. Whenever I have examined a pair of kidneys, one of which was diseased, I have found that the healthy kidney has had a rather better function than one of two normal kidneys would have, and it has never shown any reduced function because of disease of the other kidney. It is true that its function will increase after the diseased kidney is taken out, but I should not say from my experience that the absolute function, if one might use that term, of the healthy kidney has been reduced by the disease of the other kidney. In interpreting the phthalein test, as with all similar tests, we must remember that the findings indicate simply the condition of the kidney at one particular moment, and that the condition of the kidneys is influenced to a large degree by the condition of the patient. I have in mind a boy who had a calculus pyonephrosis on one side and on the other side a small stone, with a severe infection and pyelonephritis. He was admitted to the hospital from the outpatient department. He first had an intramuscular injection of phthalein. We obtained 18 per cent. in the first hour. He became worse during the night, his temperature went up, and we were not sure of the condition, and on catheterizing the ureters next day we found almost no function from either side. He was operated on the following morning and a bilateral nephrostomy done simply for the purpose of getting kidney drainage. We found that he had a calculus pyonephrosis on the right side and on the left an acute focal suppurative nephritis. The left kidney was apparently going to pieces very quickly, and I think that explains the sudden decrease of the function on that side. This case simply points the moral that this test, like all others, must be interpreted in the light of other facts. The general condition of the patient, the condition of the urine obtained from the kidney, the blood-pressure—all these things must be taken into consideration, and the test must be interpreted with common sense, and not regardless of the other factors in the case.

Dr. William E. Stevens, San Francisco: I would like to ask Dr. Braasch if he used any of the other tests of excretion at the same time that the phthalein test was used. It seems to me that there is a tendency at present to abandon recklessly all other tests in favor of the phthalein. In a rather large number of experiments during the last two years we have found the phloridzin at least of equal value with the phthalein test. They have been applied simultaneously, the phloridzin first, followed by the phthalein. In some cases the phloridzin test has seemed to be of greater value than the phthalein test.

DR. W. F. BRAASCH, Rochester, Minn.: I have occasionally employed methylene blue and indigocarmin as an aid in finding the ureters and have also used it to ascertain approximately the kidney function when we have been unable to catheterize the ureters. The question has been raised whether the healthy kidney increases its function following the removal of the diseased kidney. Although increase in function does not always follow, nevertheless I have observed it repeatedly. Dr. Geraghty and I differ only as to the comparative value of the functional test and the clinical examination, in determining whether or not to operate. It has been our experience, particularly in cases of urinary obstruction, that the clinical evidence is the deciding factor which should determine when the patient is to be operated on. As a result of bladder drainage in the first step of preliminary treatment, the patient will invariably have abundant clinical evidence of renal insufficiency if any such is present. The patient will lose in weight and strength and complain of loss of appetite or nausea and show other clinical symptoms of renal insufficiency. When the clinical symptoms improve, after a variable term of bladder drainage and irrigation, when the patient gains in weight, eats and sleeps well and it is evident that the general vitality is improved, then is the time for operation. Although the preliminary treatment and observation is necessary, the method in which the prostate is removed and the details of the after-care are factors of equal importance in making a successful operation. In other words, clinical observation, the preliminary treatment, the operative technic and the after-care are the factors which bring about a low mortality with prostatectomy, and not reliance on any chemical test of the functional output of the kidneys.

THE TREATMENT OF ADVANCED TYMPANIC DEAFNESS

CLINICAL OBSERVATIONS BEARING ON THE PROBLEMS INVOLVED *

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The title of this paper is clearly open to criticism. Deafness is a symptom and not a disease. To the patient, however, the symptom is the disease, and our treatment is of value to him only in proportion to its influence on audition. Applying the same test, are we as aurists satisfied with our results? Taking as a standard the treatment as outlined in text-books and as practiced in most aural clinics, can we claim as the net result the actual relief of a reasonably large percentage of cases?

While this paper is concerned chiefly with one type of deafness—that is, the deafness of ossicular rigidity—it may not be amiss to mention briefly some of the commoner forms of deafness from other conditions:

1. Deafness due primarily to a lesion of the labyrinth or auditory nerve. Such lesions are fortunately rare as compared with those of tympanic origin. They are not amenable to local treatment.

2. Deafness due to otosclerosis. Whether this lesion is confined to the bony capsule or invades the membranous cochlea, the deafness is not influenced by local treatment.

3. Impairment of hearing due to obstructive lesions of the eustachian tube. Functionally these cases are characterized by moderate impairment of hearing, changing noticeably with external conditions (weather, etc.); and responding favorably and more or less permanently to effective treatment of the nasopharyngeal and tubal lesions.

4. Impairment of hearing due to chronic hypertrophic otitis media. In this lesion the mucous membrane lining the entire tubotympanic tract is thickened and congested. Hearing is improved by rational treatment of the eustachian tubes, but rarely, if ever, regains the normal standard.

I shall not attempt, however, to discuss the types of deafness above defined. They are mentioned chiefly to bring into clearer relief the type of which I wish to speak, namely, the obstinate form of deafness associated with intratympanic fixation of the ossicles. And since an analysis of cases will show nearly all cases of advanced tympanic deafness to fall under this head, their clinical importance must be obvious.

STAPEDIAL FIXATION

Fixation of the stapes may be primary or secondary; that is, primary when due to morbid changes which bind the foot-plate or crura of the stapes directly to the margins of the oval window or niche; or secondary when the stapes, though free within the oval window or niche, is nevertheless immobilized through fixation of the malleus or incus, or both. So far as I have been able to determine, the type of deafness does not vary materially with the particular section of the ossicular chain which is bound within the tympanum, nor with the nature of the mechanical obstacle to free ossicular movement; that is, provided the net result is to prevent transmission of sound waves to or through the foot-plate of the stapes. On the other hand, evidence is not wanting that deafness due to direct stapedial fixation is less influenced by treatment of any kind than is the deafness of same grade and type resulting from checks on ossicular mobility not centered in the fenestro-stapedial joint.

The most characteristic and, so far as local treatment is concerned, the most hopeless type of direct fixation of the stapes is that which occurs in otosclerosis. As the characteristic functional sign of this condition we have Bezold's well-known syndrome, namely, (1) marked diminution of hearing of the lower tones of musical scale; (2) prolonged hearing by bone conduction, and (3) reversed ratio of hearing by air and bone conduction (reversed, or "negative," Rinné). We now know, however, that exactly the same functional reactions must inevitably result from any lesion confined to the conducting mechanism which seriously interferes, either directly or indirectly, with movements of the stapes.

Excluding suppurative lesions, we may mention the following tympanic conditions which not infrequently lead to ossicular rigidity, or fixation:

1. As a result of prolonged subacute exudative inflammation of the tube and tympanum, the tubotympanic mucosa undergoes marked thickening. According to Politzer, the labyrinthine windows are selective regions in which the hypertrophy, or in some cases actual deposition of new connective tissue, is often particularly marked. Theoretically it is conceivable that this process in the region of the oval window may reach a stage causing great reduction of stapedial mobility, later, under treatment or without it, undergoing recession with partial or complete restoration of hearing. This, I am convinced, is a process which explains the considerable and permanent gain in hearing which follows rational treatment in some cases.

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2. As a result of prolonged tubal catarrh with deflation of the tympanum, permanent contraction of the tensor tympani muscle may react unfavorably on the movements of the stapes by reducing the mobility of the entire ossicular chain.

3. In the course of a chronic or subacute tympanic inflammation of long standing, with occasional acute exacerbations, adhesive bands are formed between the head and crura of the stapes and the walls of the oval niche; or between the head and crura of the stapes and the long arm of the incus. Similar bands may bind the long arm of the incus to the inner tympanic wall or, occurring in the vault, may bind the head of the malleus and body of the incus to the outer bony wall of the attic. According to Shambaugh,[1] these bands may represent folds of normal mucous membrane which, during acute inflammatory change, becoming adherent, are later converted into fibrous bands, these ultimately undergoing strong and permanent contraction.

I have long believed that the presence of a reversed or "negative Rinné" in any case of deafness should be regarded *per se* as evidence of stapedial fixation. In other words, labyrinth and nerve lesions do not as a rule disturb the relation of air and bone conduction; and tympanic changes which do not seriously obstruct the movements of the stapes, do not cause reversal of the ratio between the bone conduction and air conduction of sound waves.

Let us review briefly the routine treatment for this type of deafness as practiced in most aural clinics. Ordinarily, it would be somewhat as follows: The ears are inflated by catheter, the condition of the tubes being carefully noted. If the auscultatory signs show clearly the existence of a condition of tubal catarrh, local applications of astringent drugs to the pharyngeal mouth of the tube are made use of. If tubal obstruction of more obstinate type is found, the eustachian bougie or sound is employed. When the tubes have been restored to a more normal condition, or in any case after a few weeks of treatment, the hearing is retested. Frequently a moderate improvement of hearing is found. With a view of obtaining further functional gain, the patient is ordered to return at regular intervals—once, twice or three times a week, according to the physician's views—and at each séance, whatever else is done or omitted, *the ears are inflated by catheter.*

An experience of years with catheter-inflation has convinced me that the frequent routine use of the catheter *as a means of correcting ossicular rigidity* is based on a false conception of the mechanism involved. The theory on which it is used is, of course, obvious, viz., that the act of inflation moves the drum membrane and with it the ossicles, thereby tending to restore their normal mobility. The beginner in otology is often enthusiastic over the distinct functional gain following a first or second inflation, and is at a loss to explain his failure by the same means to obtain continued and progressive improvement of hearing. The explanation of this phenomenon is that the first few inflations in the case of an individual whose ears have not been under recent treatment often do result in the breaking or at least modifying of small intratympanic adhesions, with consequent improvement of sound transmission. If continued as a routine measure the force of the inflations are exerted more and more in the direction of stretching the drum membrane while exerting progressively less influence on the ossicular chain. Used too frequently or too forcibly, and continued over a considerable period of time, the net result is a disturbance of the tone or balance of the conducting mechansim far outweighing the influence of the comparatively small passive movements of the ossicular chain. There is no question that the victim of chronic middle-ear disease may suffer further permanent disturbance of function as a result of excessive or irrational routine catheter inflation.

The first rational indications of treatment having been carried out, there remains in these cases a variable degree of residual deafness which represents the real problem of the disease.

In referring to a few experiments in the direct examination of the ossicular chain through an incision in the drum membrane, I wish to state most emphatically that this procedure is not advocated as a therapeutic measure for the improvement of hearing. The results, either negative or otherwise, are cited solely for the possible light they may throw on the lesions and the resulting deafness.

EXPERIMENTS

CASE 1.—N. W., a boy of 17, first seen in August, 1912, suffered from bilateral deafness for which, during the three years preceding, he had gone from clinic to clinic, the deafness meanwhile becoming progressively worse. When first seen by me, he was so deaf that he found it impossible to obtain work, or at least to retain any position.

Examination.—Both drum membranes were retracted and presented the white, opaque areas usually ascribed to calcareous deposits.

Hearing Tests.—Acoumeter (all metal and somewhat louder than the instrument usually sold), right ear, 3 feet; left ear, 16 inches.

Loud whisper, right, 2 feet, with errors; left, 1 foot with errors.

Lower tone limit, right ear, 60 d.v.; left ear, 128 d.v.

Upper tone limit, slightly lowered in both ears.

Bone conduction, 256 fork, markedly increased in both ears.

Rinné, reversed ratio in both ears.

Weber test, not lateralized.

A noticeable feature in this case was the disproportionate loss of hearing for conversational speech as compared with other functional reactions. On account of this disabling feature of his deafness, I advised him to take up seriously the study of lip reading. This advice was not well received, the patient contending that if nothing could be done to improve his hearing he could not make a living. He was accordingly placed on the usual routine treatment.

In December, 1912, the loud acoumeter[2] was heard as follows: Right ear, 5 feet; left ear, 2 feet. For all practical purposes, however, his hearing was in no way improved, and the patient was deeply despondent. I therefore told him that I would like to investigate the condition of his ossicles through an incision in his drum membrane, but could do so only with the distinct understanding that such a procedure would be altogether experimental. To this proposition he readily agreed.

Surgical Measures.—The instruments, a scalpel-shaped myringotome, blunt hook, and probe with a distal or terminal notch, were especially ordered for this case.

January 8, 1913. The left canal and drumhead were cleaned with alcohol and dried, and a pledget of cotton, dipped in a 10 per cent. solution of phenol (carbolic acid), was placed against the drum membrane and removed after

1. Shambaugh: THE JOURNAL A. M. A., Sept. 27, 1913, p. 1206.

2. The acoumeter which I have used in these tests is made entirely of metal, emitting a somewhat louder sound than the usual rubber-encased instrument. In testing the very deaf, such as are referred to in this paper, I have found it convenient to strike the short lever forcibly with my finger, thus eliciting the maximum sound, which again is louder than that produced in the prescribed way. It is in reference to these facts that I have used the term, "loud acoumeter," in this paper.

about two minutes. A nick in the posterior segment, just behind and parallel with the hammer handle, caused little pain and little or no bleeding. A cotton pledget saturated with 10 per cent. solution of cocain was placed in contact with the drum membrane, the head tilted toward the opposite shoulder, and the air in the auditory canal compressed as in the fistula test. Two minutes later, the tympanum was quite anesthetic. The nick in the drum membrane was now extended upward and downward along the posterior margin of the hammer handle. The hook, pointing downward, was next introduced and rotated so as to engage the hammer handle, and slight traction used. So far as any sense of "give" or yielding could be appreciated, the ossicular chain, or at least the malleus, seemed firmly fixed. By gentle traction I could draw the patient's head toward me, and I received the impression that any excessive force would result in fracture of the hammer handle rather than rupture of its ligamentous or fibrous attachments. That no excessive movements of the stapes occurred was shown in this case by absence of nystagmus or of marked disturbance of equilibrium. Several minutes of intermittent traction produced a slight sense of yielding of the hammer handle but no sudden breaking of any adhesion or constricting band that I could appreciate.

Tests immediately after this experiment showed the loud acoumeter to be heard 14 feet, an increase of 12 feet. Hearing for other sound was also increased, the patient himself being sufficiently impressed with the practical nature of the change to request a similar investigation of the right ear. Accordingly, on January 17, the right ear was subjected to the same treatment, with similar results, the hearing distance for the acoumeter being increased from 5 feet to 20 feet.

In the attempt to maintain this result it has been necessary to repeat the manipulation of the ossicles many times in both ears with the following results: In the right ear the hearing distance for acoumeter seems to be stable around 20 feet; in the left ear, it is subject to variations, or relapses, falling at times to 4 feet or less, and going back under treatment to 15 feet. The lower tone limit which was 60 d.v. in the right and 128 d.v. in the left ear, is about 48 d.v. in both ears. In the right ear, which seems to be the least subject to variation, a perforation in the postero-inferior quadrant of the drum membrane seems to be permanent, and this may be a factor in the functional change. Hearing for conversational speech is still very poor though sufficiently improved to enable him to hold a position whereby he earns support.

This case is certainly not cited as a remarkable restoration of hearing, for the patient still has difficulty in interpreting the human voice; and one cannot be sure that the functional gain, so far maintained, may not later be lost. The point I wish particularly to make is that by this method of examination I was able in this case to demonstrate a degree of rigidity involving apparently the entire ossicular chain, for which the usual treatment by inflation, etc., would be not only useless, but irrational and therefore contra-indicated.

CASE 2.—A. S., a girl of 20. Disabling deafness of type characteristic of stapedial fixation, plus physical signs of chronic middle-ear disease. Passive movement of hammer handle by method described in Case 1, showed malleus to be fairly movable. This was followed by a moderate improvement of hearing which, however, was quickly lost, the hearing receding to its previous status. Repetition of this procedure brought the same sequence of events.

Deduction: From the comparatively free mobility of the malleus and its relatively small value in sound transmission, I conclude that this was a case of otosclerosis masked by intercurrent chronic tympanic disease. Passive movement of malleus produced moderate temporary improvement of sound conduction, but in no way influenced the osseous fixation of the foot-plate of the stapes.

The futility of inflation in such a case would seem hardly to require argument.

CASE 3.—This was a typical case of otosclerosis, with Bezold triad syndrome well marked, drum membrane fairly normal in appearance and tubes of normal patency. The deafness was very advanced and the patient had been subjected to much useless treatment.

Passive exercise of the ossicles was tried in this case solely with the purpose of gaining any light which this experiment might throw on such a lesion. As might be expected, it proved practically without influence on audition.

CASE 4.—This case was that of a young woman with extreme deafness. Drum membrane on right side was thin, transparent and retracted giving an unusually clear picture of the oval niche and incudo-stapedial joint. What appeared to be fibrous bands passing from stapes to wall of oval niche seemed to show graphically the nature of the obstacle to sound transmission. A hospital colleague who examined the case with me considered it a particularly favorable case in which to attempt the release of the stapes by the breaking up of the constricting bands. This I attempted to accomplish through forcible passive movements of the malleus. The results as measured by any influence on hearing were absolutely *nil*.

This and the preceding case are cited solely in support of the proposition that there are degrees of direct fixation of the stapes, however produced, which are absolutely uninfluenced by even the most direct and forcible movements of the malleus. Under such conditions the futility of inflation and the usual method of local treatment should be generally recognized.

With regard to the cases of purely tympanic deafness—that is, those to which the popular terms "chronic catarrhal" or "chronic adhesive" are applied—it will be safer to generalize. It would be easy to cite a few cases of spectacular but purely temporary improvement of hearing, but such citations might lead to quite erroneous conclusions.

With reference to the varying character of the impediment to sound conduction, the following brief notes of conditions observed may be of interest: In one case of advanced deafness the malleus, which seemed quite rigid, suddenly yielded under gentle traction as from the rupture of some adhesive process. Coincidently with this, the patient stated that all sounds seemed unusually loud and that sounds now came to him which he had not heard for years, e.g., the friction of his shoe on the floor. Hearing distance for the acoumeter was increased from 3 to 15 feet. I naturally hoped that I had obtained an unusual result for this patient. Even before the drum membrane healed, however, there was a recession of hearing power, the entire gain being soon wiped out. On repeating the experiment, I was rather surprised to find the malleus still freely movable. This time, however, passive movements of the hammer handle did not bring a similar gain.

What occurred in this case I take to have been as follows: My first passive movements broke up simultaneously separate adhesive processes involving the malleus and the incus, or more likely the malleus and the incudo-stapedial joint. Following this, the free mobility of the malleus was maintained, while the adhesive process involving the stapes was quickly reformed; and this after its reestablishment, was no longer influenced by passive movements of the now relatively detached malleus.

In more than one case I have found what seemed a fairly movable malleus, passive movement of which produced an appreciable though comparatively moderate and purely temporary gain in hearing. This condition I interpret as the sign of direct fixation of the stapes within the oval window or niche. This hypothesis, if correct, would support the conclusion that there are grades or types of stapedial fixation which cannot be corrected through movements transmitted through the malleus and incus, and for which inflation would be obviously worse than useless.

In other cases in which I could not detect any change in the condition of the ossicular chain as a result of my manipulation of the malleus, there was, nevertheless, a pronounced immediate gain in hearing. In such cases there are two hypotheses which might explain the functional gain, viz., (a) that I had broken or modified existing adhesions so as to allow of better response to sound waves; or (b) that the constringent effect of the cocain on the swollen, or congested, tympanic mucosa may have led to better sound conduction. It is clear that the differentiation of these two influences might easily have been made had I retested the hearing after incision and use of cocain and before my manipulation of the ossicles. Such a differentiation might throw some light on the treatment of certain cases.

To return to the influence of this procedure on hearing: I have in many cases obtained an immediate gain in hearing quite out of proportion to what would have been possible by other means. If I were able to report that these functional gains were in general as permanent as they were in some cases spectacular, there is no doubt that we would have a valuable means of treating certain types of deafness. Unfortunately I am obliged to report that the results in most cases were not permanent. There has been no other case in which a functional gain comparable to that reported in Case 1 has been maintained; and the ultimate results have proved too uncertain, and as a whole of too negative a character to justify its mention as a therapeutic measure for the relief of deafness. On the other hand, the very unusual temporary gain obtained in certain cases would seem to indicate most clearly the need of further investigation, by any rational means, of the actual mechanical obstacles to sound transmission. Only along such lines will any real advance be made in the treatment of advanced tympanic deafness.

TREATMENT

Any detailed account of treatment would be as futile and wearisome as it would be out of place before the members of this society. Instead, I shall refer very briefly to certain more or less commonly accepted dogmas, belief in which seems to be based more on frequent assertion and repetition than on the observation of actual facts.

1. In relation to the treatment of the eustachian tubes, there are two time-honored superstitions which should be disposed of. The first is that the passage of a current of air through the tube from the catheter or Politzer bag exerts any permanent therapeutic influence on a chronically diseased tube; and the second is that the use during inflation of medicated vapors—e.g., menthol, ether, iodin, etc.—exerts any alterative and beneficial action on the tubal mucosa. Evidence of the value of either of these agents, so far as chronic tubal lesions are concerned, is wholly wanting.

The minutiae of the treatment of diseased tubes—whether by bougies, sounds, electrolysis, the local use of drugs, etc.—do not call for special discussion here. All have their value in the presence of certain conditions which are recognized by all experienced aurists. Eustachian bougies, while of great value in certain conditions, simply exert pressure the effect of which in many cases is only temporary. If we associate force with a bougie which is too large for the caliber of the canal at the isthmus, a laceration of the mucosa may occur giving rise ultimately to an organized annular stricture more intractable than the original tubal lesion.

In my own experience the treatment having the widest scope of usefulness in chronic tubal lesions is the local application of the silver preparations—chiefly argyrol and silver nitrate. Yankauer's method of first cocainizing the entire length of the tube and then making direct application of a 25 per cent. or 50 per cent. solution of argyrol, also throughout the length of the tube, gives the best results.

2. As to the influence of inflation in advanced tympanic deafness: If a first inflation is followed by an appreciable improvement of hearing, this may be accepted as an indication that the ears should be inflated at short intervals—preferably on alternate days—until the maximum functional gain shall have been reached. In my experience, progressive improvement can rarely, if ever, be carried beyond the third, or possibly the fourth inflation. Beyond this, if the inflations are continued at short intervals and over any considerable period of time, there is likely to occur an ultimate recession, or loss, of hearing power, due to a loss of the normal tone or tension of the drum membrane.

I do not mean to suggest that the use of the inflating apparatus should be altogether abandoned; for even after the maximum functional gain from inflation has been obtained, the catheter is still an essential instrument through which to carry out the local treatment of the tube. In other words, the inflating bag may be an essential and useful instrument when used occasionally and gently for the purpose of determining the condition of the tube, or a harmful and dangerous one when regarded as a means of exercising the drum membrane and ossicles by frequent and forcible inflations.

The subjective phenomena following inflation are such as render it difficult for either the physician or the patient to differentiate with certainly between the immediate and the ultimate results. In many cases, following inflation, the walls of the membranocartilaginous tube fall again into contact, their congested condition serving to maintain for a time a positive air pressure in the tympanum. While this lasts, the patient experiences the sense of relief and clearer audition dependent on the more normal position of the drum membrane. As soon, however, as the air in the middle ear is absorbed, the drum membrane resumes its retracted position. Frequent or injudicious repetition of inflation brings further abnormal relaxation of the membrane, with more pronounced retraction, and a progressive loss of hearing. The initial results of inflation are sudden and therefore clearly appreciable; the ultimate results of prolonged routine inflation are gradual, insidious and therefore difficult to gage.

My own experience and belief are that more of actual and permanent functional gain can be accomplished through treatment directed solely to the dis-

eased lining membrane of the eustachian canals than can ever be obtained by routine catheter inflation.

The correction of ossicular rigidity by some form of non-surgical treatment is a problem of which no satisfactory solution has yet been found. "Pneumatic massage" is a term, formerly in more common use than now, applied to passive movements of the drum membrane by means of any instrument producing alternate condensation and rarefaction of the air in the external auditory canal. It has been widely advocated and tried out, and has been found wanting.

I have long believed that exercise of the conducting mechanism, to be effective, should fulfil two conditions, both of which are violated by the usual form of pneumatic massage, viz.: (1) the membrana tensa should be made to execute movements simular to those induced by sound waves; and (2) the number of vibrations per second should bear some definite relation to that note in the musical scale which marks the lower limit of the patient's tone perception.

With patients whose lesions are confined to the tympanum, I have proved experimentally—at least to my own satisfaction—that the ossicular chain may be thrown into more or less vigorous vibration down to and below the estimated lower tone limit by a system of tuning forks properly designed for this purpose. If impressions of sound reach the inner ear chiefly through vibrations of the conducting mechanism in response to sound waves from without, why may we not make use of selected sound waves to exercise the drum membrane and ossicles in just those movements (sounds) for which their mobility is shown to be impaired? If, for example, it be shown by careful testing with small forks (for example, the Hartmann set) that the hearing is impaired, but not actually lost, for a given note, for example, c (128 d.v.), why is it not a rational and logical procedure to exercise the drum membrane and ossicles for that particular tone by means of a larger fork of the same pitch whose greater amplitude of vibration is sufficient to throw the drum membrane into more vigorous vibration?

The tuning forks employed by me were expressly designed for experiments in the exercise of the ossicles. They consist of a set of large unclamped forks, the prongs of which are ¾ inch wide and as nearly as possible of uniform thickness; the variations in pitch being regulated by graduations in the length of the prongs. They produce all the full tones of the musical scale from C-2 (32 double vibrations) to c^2 (512 d.v.), four octaves higher. They present broad, flat surfaces which when set in maximum vibration and held close to the ear, cannot fail to throw the drum membrane and ossicles into more or less vigorous motion. To illustrate their use, let us suppose a case of tympanic deafness in which the lower tone limit has been roughly estimated by means of the Hartmann set of tuning forks. If, for example, the patient can hear Hartmann c^1 fork (256 d.v.) but not the c fork (128 d.v.), the tone perception is further tested by forks representing the intermediate notes of this octave—that is, 240, 213, 192, 170, 160 double vibrations, etc.—until the correct lower tone limit is reached. For testing purposes the forks should be struck with only moderate force and held with the space between the prongs opposite the ear.

Supposing that the lower tone limit is shown by this test to be neither 128 d.v. nor 256 d.v., but the intermediate tone of 160 d.v., this fork and three or four others immediately below it in the musical scale (that is, 144, 128, 120, 107 d.v., etc.) are employed for exercising the drum membrane and ossicles. Using first the highest fork, 160 d.v., it is set in maximum vibration and held with flat surface of the prong close to the ear until no longer heard. This is repeated ten or twelve times. Then the next fork, 144 d.v., is used in the same way and so on through the series of successively lower forks, until one is reached which cannot be heard even momentarily in maximum vibration. Used in this way tones several notes lower will be heard. Letting the ear now rest for one or two minutes, in ceratin cases an appreciable though moderate gain in hearing will be found.

To guard against possible misapprehension, I wish to state clearly the limitations of this procedure. It obviously cannot be expected to break up old or firmly organized adhesion bands within the tympanum. It may, on the other hand, render certain adhesive processes less rigid and to this extent bring about an increase of joint mobility with proportionate functional gain. It is therefore of greater efficacy in moderate than in advanced grades of functional impairment. It should in fairness be spoken of only in comparison with other advocated methods of combating ossicular rigidity. In this light, its advantages may be stated as follows: In theory it is a rational measure in that (1) it calls for no exaggerated excursions of the drumhead or for movements having no relation to the function of sound transmission; and (2) it forces the drum membrane and ossicles to vibrate in response to just those sound waves, or tones, for which their mobility is known to be impaired.

In actual practice the results have varied considerably in different cases, some being aided while others have shown little or no improvement. As offsetting failures, there have been no untoward results.

In the foregoing pages, I have outlined what in my experience have proved the more practically useful measures in advanced tympanic deafness. It is clear that if we are to make practical headway in lifting the handicap under which many of these patients labor, we must ultimately develop our work along other lines and broaden somewhat our conception of the task before us. We must discard the idea that the hearing by the patient of an acoumeter a few inches or a few feet further from his head, while he is still hampered by practical inability to interpret the average conversational voice, represents a practical success. From the patient's view-point it is a failure; and the only consideration which leads him to regard it as of value to him is the fact that he views this somewhat negative result in the light of a milestone marking what he believes to be his progress toward better results, or as an anchor by which he resists the current toward hopeless deafness.

I have during the past two years given a good deal of time to hearing tests, and particularly to an effort to place our tests of hearing for conversational speech on a more exact basis; in a word, to developing a simple qualitative test, or one showing the relative auditory acuity for the various speech components. These studies have led me to somewhat unexpected conclusions in certain directions having, it has seemed to me, a practical bearing on the interpretation or management of certain forms or grades of deafness. They fall too far outside of the scope of this paper to be included here. They may be made the subject of a later report.

58 West Fifty-Sixth Street.

ABSTRACT OF DISCUSSION

DR. JOHN R. PAGE, New York: I recall the particularly brilliant result in the case referred to in the paper. I have intended trying the operation and found one case in which I thought it would be well worth while; but the patient asked if there was any danger attached to it and I said that possibly there was, as I recalled a case in which Dr. Kerrison got considerable traumatism or infection that caused considerable alarm, did you not, Dr. Kerrison?

DR. KERRISON: Yes, I had one case. Many of the cases had physical signs of acute inflammation. In one case there were mastoid symptoms. It is obvious that there is a chance of infection of the tympanum and, of course, it might go on to mastoiditis, but if you are careful in your technic the danger is slight. All the cases have healed quickly.

DR. GEORGE L. RICHARDS, Fall River, Mass.: How did Dr. Kerrison determine that he got movement of the stapes?

DR. NORVAL H. PIERCE, Chicago: From Dr. Kerrison's preliminary remarks, I gathered that he cut a hole in the membrane to ascertain the mobility of the stapes. That procedure was tried by Schwartze away back in 1872, I think, and it was discarded, first, because one could not ascertain the mobility of the stapes by touching it, and because Bezold proved that he could demonstrate its fixation by functional tests. He showed that the sound waves get into the labyrinth in two ways; up to thirty-six vibrations they are conducted through the stapes by wave vibration; then, the entire ossicular chain vibrates *en masse* and gradually beyond that it passes in by molecular vibration. He proved this by observations on patients during life and observations after death by microscopic examinations. Therefore I do not believe that we should revive this old idea of cutting a hole in the membrane to ascertain the mobility of the stapes. I have operated in the past, some years ago, in quite a number of cases of what we know now to be fixation of the stapes, and I always failed of improvement, and I have had several results that were very distressing; one in which complete facial paralysis occurred and remained permanent. In several others infection of the mastoid occurred; none that required operation but which caused a good deal of worry. It is impossible, I think, to obtain any permanent results by cutting a hole in the membrane and putting a hook around the handle of the malleus to try to work the adhesions loose. One occasionally gets slight improvement, but it passes away as soon as the membrane heals up. I have had pronounced benefit to hearing from ossiculectomy in cases in which the ossicular chain was demonstrably bound down by adhesions between the promontory and the umbo. One case of this type was particularly instructive; Neuman's method of local anesthesia was attempted. When the cocain was injected under the periosteum in the bony canal, I was surprised to see quite an enormous cholesteatomatous mass project out of the rather small opening in the membrana flaccida and it occurred to me that that might be a very good treatment for certain cases of cholesteatoma. The entire epitympanic space was irrigated and emptied. I got no anesthesia, however, in this case, because the fluid was not retained. General anesthesia became necessary. Before proceeding with general anesthesia, and after washing out the cholesteatoma, I tested the hearing and found it considerably improved. The hearing was increased considerably and permanently by the ossiculectomy and the cholesteatoma was cured. She could hear a whisper only within 3 feet before operation; afterward something like 15 feet. I think we should be careful, however, not again to revive a hope that has long since been buried in our otologic experience, namely, that by merely dividing or breaking up adhesions within the tympanic cavity, especially if they are of any considerable extent, we may obtain permanent, considerable improvement.

DR. W. S. TOMLIN, Indianapolis: I have had some slight personal experience along the line given us by Dr. Kerrison, my attention having been called to it by Ruttin in Vienna. He didn't recommend incision of the drum, but devised a hook which I have used in three cases. In one the result was good and in the other two not so satisfactory. I found it necessary to follow up the operation with the more or less standard treatment for chronic catarrhal otitis media. The treatment may be followed out along the lines following the Heath operation. I have been inclined to consider that in a certain proportion of the cases in which Heath gets increased hearing after his operation it may be due to the fact that he is persistently keeping the middle ear dilated and keeping down adhesions following the operation. We are not able to measure the movement of the stapes, but if we can affect the movements of the malleus and the stapes is not bound, it will move in proportion of inverse geometric progression. While these adhesions have been going on the individual may find that he can increase his hearing by blowing his nose, and in one case I found marked distention of the drum membrane from this cause. In it there was increased benefit by a thickening of the drum following the use of irritants. The indications for the procedure are: (1) of course a reduced hearing; (2) negative Rinné without absolute increased bone conduction; (3) markedly better hearing with audition tube; (4) retracted drum with restricted malleolar movement; (5) the other evidences that the stapes is movable. It has not seemed to me indicated in the presence of active inflammatory processes.

DR. S. MACCUEN SMITH, Philadelphia: I doubt if Dr. Kerrison can hope to have any permanent results from this procedure. Some years ago I performed a number of operations, following the example of Sexton and others; there was a series of about 168 cases, and they were, with few exceptions, decidedly spectacular in point of immediate improvement. They were also notable, with several exceptions, from the fact that the subsequent loss of hearing was as rapid as would have occurred without operative interference. Following up the cases in later years, I thought they lost their hearing even a little more rapidly than if I had not operated. I am much inclined to adhere to a memorable saying of St. John Roosa, some years ago: After listening to a number of papers on the improvement of hearing in these cases, he said: "They will probably hear when Gabriel blows his horn, but not before."

DR. P. D. KERRISON, New York: I wish to make it clear that I had no intention of proposing the method of examining the ossicles described in this paper as a new treatment for deafness. A careful reading of my paper will show that there is no ambiguity of statement and therefore no reason for misinterpreting my meaning on this point. I do believe that the usual management and treatment of these patients is unsatisfactory, and that a revision or an analysis of methods and results is therefore desirable. I agree absolutely with Dr. Pierce's remarks on the treatment of otosclerosis, first because they are logical, and secondly, because they are in accord with my own personal experience. It is evident from the discussion that there has been some misunderstanding of the purpose of my paper. This, I think, has been due largely to the haste and necessity for skipping parts in reading. My meaning will be made clear to those who may read my paper when it appears in THE JOURNAL.

The Power of Accurate Observation.—By accurate observation we must mean not the mere exercise of the senses, not the mere seeing or hearing, or touching of a thing, with some levity of thinking about it; we must not mean even the keenest use of the eye cultivated in microscopic work, or of the ear-hearing sounds that to the uneducated sense would be inaudible, or the use of the finger with the most refined detective touch. All these higher powers of the sense you must acquire by careful study practice, and you must learn to exercise them all with all the attention with which a strong will can direct and watch them: But even all this, difficult as it is, is only a part of scientific observation. This must include, besides, an habitual constant watchfulness, the taking notice of all the conditions in which objects or events are found; their concurrence, their sequences, their seeming mutual relations, all their variations.—Sir James Paget.

THE RELATION OF THE RHINOPHARYNX TO THE MIDDLE EAR AND MASTOID*

E. L. JONES, M.D.
CUMBERLAND, MD.

For about one-sixth of a century it has been my custom to treat the rhinopharynx as the main point in most diseases of the tympanic contents, and supplementary measures have varied only with the introduction of new agents, such as epinephrin, argyrol and hexamethylenamin.

Volumes have been written on the relation of diseases of the nose and nasopharynx to middle-ear disease, but my contention is that every case of acute middle-ear inflammation must spring from a pathologic rhinopharynx, however normal or symptomless it may seem, or may have been previously; and our most effective measures must be directed toward treating the nose and removing the cause of the ear trouble.

The cavities of the temporal bone may be looked on as accessory cavities of the rhinopharynx, which by chance happened to contain the organ of hearing, with its complex and vital surroundings. Thus sheltered, the only gateway for bacterial invasion is the eustachian tube, and if this be guarded, few germs are apt to find entrance by the blood-channels. From time immemorial, the dependence of otitis on acute coryza, and pharyngeal infections—whether tonsillitis, diphtheria or the exanthems—has been recognized, and for a generation or more its association with adenoids and grip has been known; but the latent infections from the rhinopharynx, where none of the preceding conditions have been manifest, are only now being recognized. In his recent text-book, Kerrison says he believes that "more cases of acute otitis media result from a simple nasopharyngitis, acting on an individual in whom strongly predisposing conditions exist, than can be traced to all other exciting causes combined." Likewise, in his presidential address before the American Laryngological Society last year, Dr. Leland says: "And since the ear is also an accessory cavity, nine-tenths of whose diseases originate in the mucous membrane of the nose and nasopharynx, etc."

Admitting, as all must, this etiologic relation, what advantage has been taken of it in treatment by the universally taught and practiced methods? If some operation is needed in the throat or nose, we are advised to do it; but opinion is divided as to the advisability of doing operations in acute otitis. Quoting further from Dr. Leland, he "removes adenoids, including Rosenmüller's fossae, during acute stage, to deplete the tissues, thus often obviating the necessity of lancing the drum." Personally, I prefer doing any operation of this character during a quiescent stage, for the purpose of preventing recurrences.

But how about the much more numerous cases in which no operation is indicated? We are told to keep the nares and rhinopharynx washed out or sprayed with mild, unirritating alkaline fluids, to which may be added sufficient phenol (carbolic acid), menthol or essential oil to give a smell suggesting "medicated." In my belief these sprays wash out only a small percentage of germs, and do not make it sufficiently disagreeable to others to cause them to move out. In the plan to be advocated, there is no call for Dobell's solution with its varied formulas, or liquor antisepticus alkalinus, or any of the sweet-scented or pink-tinted proprietaries. As will be set forth further on, this relation of the rhinopharynx to the middle ear applies equally to subacute and chronic cases, and in a measure to chronic suppurative cases also. The number of cases on which conclusions are based could probably be designated with three figures, but I believes these conclusions will be sustained by trial in other hands.

In all cases, whether acute, subacute or chronic, and regardless of the specific cause, the rhinopharynx is mopped, or rather forcibly scrubbed out, with a mixture of phenol, tincture of iodin and glycerin, to which camphor and menthol have been added, of sufficient strength to set up a violent reaction, with painful sore throat, lasting from part of a day to several days. Patients rapidly become accustomed to the effect, so that after half a dozen applications this treatment causes only a passing discomfort. Adults and children are given the same treatment, though in infants under three years old the mixture is weakened. When compressed air is available, self-restraining patients have the nostrils sprayed with a camphor-menthol-iodinized oil; otherwise it is swabbed through the lower meatus on each side, and back to the upper throat on cotton carriers, and the strength is decidedly more.

My two formulas are, first: Fifteen grains each of camphor and menthol are rubbed to a liquid; then 1 dram of compound tincture of iodin, 2 drams of alcohol, and glycerin to make 1 ounce are added. This I call camphor-menthol compound. For spraying it is diluted with nine volumes of hydrocarbon refined oil. Practically this same formula, flavored with cinnamon oil, has been on the market for several years ready mixed under a copyrighted name.

The second formula is 1 part phenol, 1 part tincture of iodin saturated with potassium iodid, and 2 parts glycerin. This is the iodin and acid carbolic compound which I designate I. & A. C. Co.

For swabbing, a fair sized cotton mop is fixed in a strong curved Sims carrier, which is made of nickeled spring brass, or the Ayres modification, made of steel, dipped first in the I. & A. C. Co., squeezed against the bottle neck to remove excess; then dipped in the C. M. Co. and rubbed against bottle neck only sufficiently to prevent dripping. It is quickly thrust behind the palate until it strikes the vault of the pharynx, and then forcibly rubbed from side to side, unless the palate muscles prevent moving it, in which case it is forcibly pressed where it rests. I consider it important to use force in this procedure, as though it were intended to lift the patient bodily on the instrument; hence the need of a heavy stout instrument, and not a bent wire, or other device not permitting great force.

In the painful stage of acute inflammation, or in the acute catarrhal stage without pain, the nostrils are sprayed or swabbed with a few drops of a 2 to 4 per cent. solution of some local anesthetic, and from ½ to 1 drop of 1:1,000 epinephrin. This not only contracts the vessels, but it is believed that the sedative effect of the anesthetic on the sensory nasal nerves exerts a beneficial influence on the vasomotor nerves supplying the inflamed areas; this is then followed by the C. M. Co. to the nose, and the I. & A. C. Co. to the rhinopharynx. This treatment is made only once in twenty-four hours, and the patient is not given any nasal spray or throat wash whatever. The only local meas-

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

ure for home use is the hot-water bottle. If the tongue is coated, a good dose of calomel, followed by salts is ordered; if not coated, the salts only. Since the announcement that the formaldehyd-liberating drugs are eliminated by all the mucous and serous secretions as well as by the urine has been accepted as fact, patients in the acute stages have been put on regular doses of hexamethylenamin. Physiologic chemists assert that formaldehyd is liberated only in acid mediums, but there may be other explanations than the liberation of formaldehyd, of good resulting from this medication.

Several years ago, a formula appeared in some British publication, of a local anesthetic for the inflamed drum membrane, claiming to make lancing the drum painless. I tried it for that purpose, but it was a disappointment. However, I found it to be a most excellent local application, and gradually I have done away with lancing the membrane, so that I no longer make a free incision in the drum first thing, a thing very hard to do properly except under general anesthesia. This preparation is made by dissolving epinephrin (adrenalin chloride, P., D. & Co.) in anilin, 1:1,000, and then making a 10 per cent. solution of cocain in this. Anilin, so-called anilin oil, is a poison, but just how toxic I have never been able to learn; but I have used it in very small quantities, and have not as yet observed signs of anilin poisoning, designated as coal-tar poisoning, as exemplified in overdoses of acetanilid by depression of circulation, blueness of lips, extremities, etc. These symptoms have occurred from absorption when acetanilid was used even as a dusting powder on raw surfaces. Anilin is used in large quantities in shoe-blacking and printers' inks, but only meager reports of harmful effects from handling them have been accessible to me. The reason for the anilin is that it will penetrate dermal membrane, of which the outer surface of the drum consists, softening it to permit the penetration of the epinephrin and cocain, which localize the inflammation to the tympanum. In the course of a few hours, rarely exceeding twelve, there is an abatement of severe pain, and usually inside of twenty-four hours, its entire annulment. In a fair proportion of cases suppuration is entirely aborted; in others, even while fever continues, the pain will disappear, the redness and bulging of the drum diminish, and the impression is created that the suppuration has aborted. Then the drum develops a small perforation and discharges a secretion, mucoid rather than purulent, which ceases in a few days.

The mode of application is to have a loosely twisted swab longer than the auditory meatus, moisten the tip with not more than 1 drop for a child, or 2 drops for an adult, carry it down to the drum, withdraw the wire carrier by a rotary motion, reverse to its winding, and crowd the excess of length into the meatus to bring a slight pressure against the drum, and retain in place; then fill the concha with extra cotton. This is done only once in twenty-four hours, during the painful stage, and one or two days longer. It requires about three days for these plugs to have all the medicament absorbed from them, when left indefinitely in a dry ear.

The result of these combined measures is to localize the inflammation in the tympanic cavity. If there be fluids or secretions which do not drain out through the eustachian tube, which in my opinion they usually do, the anilin will have softened the drum by maceration, and a nice round little perforation, usually the size of a big pin-head, will open in the lower segment of the tympanum, and stay open as long as it is needed, and then promptly close, thus behaving better than incisions which sometimes heal before their work is done. As soon as the painful stage has been passed, one or two days, swabs after the manner described are wet at their ends only with a 25 per cent. solution of argyrol, and left in the ears against the perforation, filling the canal's full length, to act both as a medicament and a drain, and are changed daily for a few times, then at increasing intervals as recovery progresses. Cases which at the beginning present no mastoid tenderness rarely develop any, and the period of discharge does not exceed one week. When there is already mastoid tenderness of only a day or two's duration, it abates usually in two or three days, and the suppuration within two weeks. When the ear has abscessed more than a week or two previously, and the patient has the accepted symptoms of mastoid abscess, it may require nearly a month to heal in patients who finally recover. After the acute stage has passed by a week or more, inflation by the Politzer method is usually added, but I do not believe this to be necessary, as good results are obtained without it. There is steady improvement in hearing, but not so obvious to the patient as a sudden improvement by inflation, which, however, only shows that the integrity of the ventilating system is being restored, and the improvement comes from this restoration, whether inflation be used or not. During the painful stage, patients are instructed to clear their heads and throats by hawking and suction, and not by blowing the nose, which blowing sometimes inflates the tympanum, causing great pain, and also probably driving secretions back into the mastoid. Not a drop of water is ever used in the meatus, and the perfect recovery of these individuals with healed drum, full hearing and no tinnitus is anticipated with just as much confidence as we expect an eye to recover from a properly treated iritis.

For some time it was with feelings of apprehension, and almost of guilt, that medical treatment was persisted with in cases presenting clearly the indications for surgical measures as all authorities give them.

One of the things of first importance in treating almost all acute febrile diseases is putting the patients to bed, or at least keeping them in a warm room; and yet owing to environment it was necessary for me to treat a large proportion of acute ear cases as office patients, some coming considerable distances from surrounding communities, and mostly during the cold months of the year. This necessity is regrettable, but the fact that patients recovered in spite of it adds confidence to the merits of the treatment.

The more recent the mastoiditis, the quicker it yields to treatment, but in quite a number of instances where discharge and constant boring pain have been present for days or weeks, with fever, septic look, sagging posterior wall, tender mastoid, sometimes swollen or with cervical cellulitis, discharge profusely purulent, at times blood-stained, or in chronic quiescent suppurative cases which have flared up with the foregoing picture, the cases have been brought to a favorable issue. Some of the old chronic suppurations have not only quieted down, but had regeneration of drum membrane to the point of closure, and sometimes restoration of hearing previously impaired.

A measure which may have an attractive future has occasionally been resorted to in the most urgent cases for seven or eight years past, the principle of which was based on subconjunctival injections in the eye, with which my experience has been most happy. One-half dram or more of mercuric cyanid, sometimes with a little morphin, was injected, in strengths varying from 1:500 to 1:1,500, under the periosteum over the tender mastoid; quinin and urea hydrochlorid has been used instead of the morphin, and a weak solution of ichthyol instead of mercuric cyanid. So far, the relief of pain and inflammation has been most gratifying and speedy, although the same type of swelling results as follows the injections in the eye. This produces an enormous outflow of protective lymph or serum into the tissues, which in the battle against disease, Sir Almroth Wright compares to a nation's marshaling all its forces at once, and not sending them against an enemy in small detachments. The infiltration subsides in a few days, feeling after it begins to soften as though under the skin was a bag full of pus. So far, no patient has been given over a single injection, and the usual routine of swabbing the rhinopharynx, and draining the ears has been pursued. The two following cases are illustrations of the injection:

CASE 1.—Eliza J., aged 35, reported on Nov. 30, 1913, with severe pain in the right ear which had been operated on in Washington several years before by a prominent aurist. There was a deep fissure along the line of the mastoid wound, and the ear-drum was hard to see by reason of swelling and crookedness of the canal. There were fever, rapid pulse, loss of appetite and sleep, and tenderness of tip of mastoid and antrum. These symptoms did not yield to treatment, but increased. The covering of the mastoid became red, swollen and brawny, obliterating the sulcus of old operation, the neck was stiff, pains incessant day and night, fever continuous. The patient was fast losing strength, looked profoundly septic. December 3, an injection of mercuric cyanid with morphin and quinin and urea hydrochlorid was made about noon, and before evening the pain was entirely gone. The patient began to sleep sound, appetite returned, and pulse, temperature and complexion soon became normal. The ear had a slight discharge, which ceased by December 17. A small opening occurred at needle puncture, from which serum discharged for several days. Hearing is restored to normal.

CASE 2.—Floyd B., aged 15, reported March 4, 1914. One month previously he had severe earache for two days and nights, followed by subsidence of pain, and discharge lasting several days. After about two weeks the ear began to pain, destroying appetite and sleep, and after three or four days a swelling appeared over the mastoid causing some cellulitis, and pushing auricle forward, in which condition he was when first seen. There were fever, dizziness, rapid pulse and pale, septic appearance. There had been no discharge with the last attack, and the swelling in the meatus prevented sight of the drum. There was marked nystagmus when looking toward opposite ear. It was thought this might be a case of suppurative periostitis. A fine aspirating needle was introduced to the mastoid cortex, and several drops of thick pus were withdrawn. Injection was then made of a dilute solution of ichthyol, which required much force to insert at first, but suddenly the last portion of about 5 c.c. went in without resistance, and it was noticed running out at the nose, thus proving the connection with mastoid cells, either from carious perforation or natural fissure, as in some cases recently reported by Luc. Between early afternoon and evening all pain disappeared, the boy slept soundly for the first time in a week, appetite and color returned, and he came daily as an office patient for treatment of rhinopharynx, etc. To the usual treatment, vacuum suction through the nose was added. For several days he hawked profusely a discharge from the throat, dark-tinged by the ichthyol, and tasting of that drug showing that the mastoid was draining through the eustachian tube. The boggy swelling over mastoid and tallowy infiltration in neck gradually declined, during a week, and he did not have another twinge of pain. The drum when seen was intact, and no discharge appeared from it at any time. The spontaneous nystagmus soon left, but was marked from turning. Hearing is perfectly normal; no tinnitus.

In acute and subacute catarrhal deafness, the same treatment of nose and rhinopharynx is applied, plus inflations by the Politzer method. The restoration of hearing follows in direct proportion to the duration of the trouble previous to beginning treatments, which should be continued at increasing intervals until the maximum of hearing is reached and maintained. It is my belief that the maximum should equal in adults the best it has been within six months previous, and in children in twelve months previous.

In long-established chronic catarrhal otitis media, the limit of prognosis is to prevent further deafness, not claiming to restore lost hearing, or to relieve tinnitus. As a matter of fact, a fair proportion of patients do eventually improve in hearing, and have diminution of tinnitus, or its entire abatement, except when the patient has colds. The longer the disease has existed, the longer this improvement is delayed in showing. Sometimes, after a long course of treatment it will jump up as suddenly as a "jack-in-a-box," but oftener it is six months or a year or more after the treatment has been finished that improvement is first demonstrated, and it may continue to do so for several years following.

In the belief that artificial ventilation of the ear is a matter of minor importance, the eustachian catheter is seldom employed, dependence being placed on the Politzer method. All patients are warned against taking any quinin, salicylates, or salicylate substitutes, such as aspirin, all of which I believe to be detrimental to hearing which has been severely impaired. Several relapses, some irreparable, have been observed from the knowing or ignorant use of these drugs. One patient with acute otitis with mastoid suppuration had a concurrent attack of acute rheumatism in the foot, for which his family physician gave the usual salicylate treatment. The man recovered perfectly from the suppuration, but the ear was hopelessly deafened, and has so remained for several years.

The course of treatment for the chronic cases should represent the equivalent of twice a week for three or four months. Whether this chronic middle-ear disease is due to a low-grade bacterial infection, or toxemia, or something else undefined, surpasses my ken; but if due to low-grade infection ascending through the tube, we are hitting at its source in treating the rhinopharynx.

Cases of almost life-long tympanic suppuration have sometimes stopped from a few throat-swabbings, when aural treatment alone had not been able to bring this about; so that in addition to the routine treatment of chronic suppuration through the canal, the treatment of the rhinopharynx and nares is regularly carried out. This in all probability prevents reinfections through the tubes and brings the same results as are claimed by Yankauer's method of closing them.

First National Bank Building.

ABSTRACT OF DISCUSSION

DR. OSCAR WILKINSON, Washington, D. C.: I would protest against intranasal or postnasal operative procedures during acute otitis. On two occasions I had bad results from operating on patients who were brought in from the country and insisted on operation. In the first, a double otitis media followed removal of the tonsils and adenoids in a child that had a cold of one day's duration. In another case, I operated on the tonsils in a patient who had a cold and a peritonsillar abscess developed on the third day. I attributed both of these infections to operating during an acute inflammation.

DR. JOHN J. SULLIVAN, Scranton, Pa.: I disapprove of the methods advocated by Dr. Jones and would mention the case of a man in Scranton who, following this course, has recently had a case in which a double mastoiditis requiring operation resulted.

THE ORIGIN OF LABYRINTHINE REST-TONE *

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I purpose to account for the origin of the tonus which I believe emanates from every functionating static labyrinth, and which in action and in rest assists to orient us in space.

It can be shown that the otolith organs contribute their share toward rest-tonus, besides assisting in determining positions and motions in space both rectilinear and curvilinear. It is known that influences from many other sources aid the labyrinth in its work, but at this time I will ignore all these, as I desire to concentrate the argument on the semicircular canals.

The semicircular canals are so placed relative to each other and to the utricle, in both temporal bones, that endolymph flow cannot normally occur in one canal without influencing the flow in the other two.

Barany[1] has shown that all three ampullae of both labyrinths are in relation with all six eye-muscles of both eyes, and that we can account for the simultaneous contraction of one set of eye-muscles, and the relaxation of another set, due to peripheral stimulations causing nystagmus, only provided there exists a rest-tonus in the cristae of the canals.

Nystagmus is not necessarily more truly horizontal, or truly rotatory when the external or the superior canals are respectively exactly in the plane of rotation; nor as I have observed necessarily truly in the plane of the canal enduring maximum caloric excitations. Moreover, the position to obtain a given nystagmus varies in different people.

It follows that the character of all nystagmus is dependent on certain combinations of ampullae stimulations (+ or —), and that normally one ampulla never alone determines orientation phenomena.

Shambaugh[2] has demonstrated on a fistula patient, that the: "duration of nystagmus = duration of peripheral stimulation = duration of endolymph current." He concludes that this eliminates the necessity for tonus centers to control the duration of nystagmus, and that it is a potent argument for the origin of labyrinth tonus from the hair-cells of the cristae. From Ewald's and caloric experiments, it also appears that Shambaugh's conclusions are correct. Ewald obtained a greater reaction with flows toward the horizontal ampulla, than with those away from it, and in the vertical canals, greater reactions with flows away from the ampullae.

These facts suggested to me an explanation of the origin of rest-tone, and of many phenomena intimately connected therewith.

In passing, please note that in Ewald's experiment, the opposite labyrinth was functionating, whereas in Shambaugh's the opposite labyrinth was destroyed. This circumstance may partly account for the differences in the amount of reaction obtained between to-and-fro currents in Ewald's, and the lack of marked differences in the reaction from such current in Shambaugh's experiment.

From the foregoing I deduce the following:

1. Physiologic endolymph movements excite impulses from the end-organs, which are interpreted as sensation complexes from all the ampullae. If the impulses from the two labyrinths approximately balance (or through practice are balanced by the aid of the coordinating apparatus), no sensation of movement is experienced. Binaural galvanic or caloric reactions with the head anywhere in the anteroposterior vertical plane demonstrate this clearly, as does the rotation of bilaterally non-functionating labyrinths.

2. The body normally receives a sensation-complex (and a tonus) in the anteroposterior vertical plane, approximately equal from its two sides, but in all other positions, various complexes (toni) must be forthcoming, depending mainly on the position of the head. Any other assumption would not account for balance phenomena observed in the various positions of the body.

3. Labyrinth tonus originates from all the labyrinth end-organs. Postdestruction phenomena also prove this to be true.

4. Endolymph stress is amply capable of maintaining static control in rest, as it does so in action.

5. Positive endolymph stress, within the canals at rest, can occur only because of convection currents ever present therein. I have shown elsewhere[3] that convection currents may be caused by disease, and I shall attempt here to explain their occurrence in health, in one or two ways:

1. By a difference in temperature between the inner and outer labyrinth walls. This may be stimulated by binaural caloric irrigations. Under this influence, the moment the head is moved from the anteroposterior vertical plane, there arise marked unbalance phenomena, due to the placing of the canals in one side of the head more nearly in the optimum, and those within the other side of the head more nearly in the pessimum position for caloric reactions. This theory of thermic differences is therefore improbable, in health.

2. By a constant, but variable difference between the temperatures within the ampullae and the non-ampullated portions of the canals. Is such a difference possible?

The temperature of the brain is normally higher than the blood supplying it,[4] and blood-vessels coming from within the cranium contain blood of a higher temperature than do those from without. The internal auditory artery, a branch of the basilar, traverses the inside of the skull before it distributes its blood-heat to the ampullae of the semicircular canals. This

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Barany: Ninth Internat. Otol. Cong., 1912.
2. Shambaugh: Ninth Internat. Otol. Cong., 1912.
3. Fowler, E. P.: The Effect of Local Autogenous Temperature Variations, Laryngoscope, March, 1914.
4. Foster, M.: Physiology, p. 477.

heat is transmitted mainly by conduction and radiation to the ampullae, and as the tiny twigs lie along the concavity of the canals, these receive less and less heat the further the vessel courses from its source.

Because of the heat, the specific gravity of the endolymph adjacent to the ampullae is lowered, and within every canal not in the horizontal plane a current is impelled by the force of gravity which establishes, and maintains, a stress on the cupulae of all the canals, at all times.

The specific heat of the spongy labyrinth capsule is 0.71, whereas that of the compact inner labyrinth walls is 0.3, which indicates that whereas protection from the sudden external variations in temperature is provided, changed temperature gradients arising from internal heat variations are quickly established. Moreover, the temperature gradients from the ampullae are more abrupt than would otherwise obtain, because the conductivity for heat of the hard bony canal walls is better than that of the surrounding tissues, and it seems as though the temperature within the ampullae would always be higher than the temperatures elsewhere in the canals, because of these facts and because the blood-supply of the outer labyrinth capsule is derived mainly from the tympanic and other vessels, most of which have not traversed the inside of the cranium, and which must contain, in consequence, blood of a lower temperature than the ampullae vessels, and furnish the principal means of heat dissipation for the static labyrinth and its contents. It follows that the endolymph rest-currents will vary directly as the velocities and amounts of the local blood-supply.

If both labyrinths be normal, and the head is inclined in various directions, why do we not, under these conditions, get an unbalance similar to that experienced during binaural caloric irrigation with the head in any but the anteroposterior vertical plane? At first sight it would appear difficult to fathom this mystery.

If normally there exists constant stress from connection currents within the membranous canals, these currents, owing to the position of the canals as regards the horizontal, in all animals, will be during the greater part of life in the following directions:

In the superior canal, toward non-ampullated end, therefore in + stimulation direction.

In the posterior canal, toward non-ampullated end, therefore in + stimulation direction, aided by superior canal flow.

In the horizontal canal, toward ampullated end, in + stimulation direction, aided by superior canal flow.

Note that the flow in all the canals is in the + stimulation direction. I designate the endolymph pressures and flows, + or —, depending on their direction, in, or not in, the direction of greater ampullae stimulation.

The difference between the direction of + stimulation flows in the horizontal and vertical canals may be explained on the theory that end-organs in the habit of furnishing a tonus derived from endolymph flows in fairly constant directions would only respond to such flows, or at least respond to such flows more readily than to absence of, or to minus flows, in either of which latter eventualities relaxation of the usual tension on the hair-cells of the cristae would occur. In many positions of the head, the endolymph convection currents will be reversed in some canals, in others augmented or retarded. Thus untold numbers of flow combinations and a like number of tonus (stimulation) complexes are brought about and in any and every position of the body and head in space a definite suitable rest-tonus is provided for balance and orientation.

The fistula, galvanic, rotation and caloric experiments are all grossly abnormal, and really demonstrate but little except when positive, but a study of these tests reveals nothing incompatible with the theory of convection current control which I have advanced.

Long ago E. Cyon[5] observed that the obstruction by division of one or more of the canals caused transient effects, provided it was not bilateral and unsymmetrical. This can be accounted for only by assuming the presence of a rest-tonus from the cristae, due to constant endolymph stress. The unsymmetrical bilateral nullification of endolymph flow would naturally be more difficult of recoordination, than symmetrical or unilateral nullifications. Caloric experiments also support this contention.

I have observed spontaneous nystagmus which with the vertigo, was distinctly influenced by changing the position of the head. Why does a patient with a recently destroyed labyrinth lie on the sound side? We are told that it is because he can thus increase the resistance to the nystagmus by being in a position better to turn his eyes toward the side of the slow component. Although this is true, it occurred to me that it is also true that in the side position assumed by these patients, all the ampullae of the functionating labyrinth lie at a higher level than their canals, and thus the higher temperature which I believe resides within the ampullae is rendered less potent as an instigator of endolymph currents (rest-tone) than in any other position of the body. The upper labyrinth being dead, but little unbalance phenomena occur.

With total absence of endolymph flow in both labyrinths, no vertigo or nystagmus, etc., can physiologically be aroused, nor can tonus exist.

I have observed many patients in whom rotation failed to elicit nystagmus or vertigo, and yet caloric excitations reacted strongly and readily. I explain this seeming anomaly as follow: these are usually nerve deafness sufferers (often specific cases). Their whole auditory apparatus is below par. Hence the usual analogous canal currents during and following rotations are insufficient to elicit reaction phenomena, whereas unilateral or unsymmetrical bilateral flows, being more irritating stimulation complexes, are wont to give exaggerated reactions. This seems the most probable explanation because normally the caloric tests are the weakest we employ to determine presence of function.

The straight line filaments of critical velocity flow (the working flow of the canals) tend to continue during and after changes in position, and unless the changes are sufficiently sudden (acceleration speed, + or —, sufficiently great) the current changes are so gradual that no motion is sensed. In Shambaugh's case, the flow could not continue on stoppage of the pressure, owing to blockage of the canal tested by inflammatory lesion. Hence nystagmus, flow and stimulation were coincident. In Ewald's experiment, flow and stimulation in the tested canal were coincident, but the opposite labyrinth was acting, and when

5. Cyon, E.: Thèse de Paris, 1878.

the stimulation from the fistula pump ceased, this acting labyrinth supplied the stimulation which produced the phenomena.

The continuance of the sensation of turning after rotation, or after caloric irrigation has ceased, and the delay in sensing actual rotation, may thus be partly explained by the persistence of critical velocity flow.

There are many other facts which lend themselves to my theory of labyrinth tonus. I mention the following:

In those cases of vertigo due to the so-called autointoxications, high blood-pressure, animal or vegetable or mineral tissue poisons, etc., how can we account for the various forms of vertigo experienced, except by a more or less transient bilateral inequality in the impulse complexes? Surely if the poisons, blood-pressure or other factors were bilaterally equally distributed to the vestibular and other coordinating mechanisms (as they would be through equal blood-supplies to both sides of the head), vertigo could not result. The stimulation impulses from the two sides would balance each other, and simply heighten or lessen tonus. Of course lessened tonus can beget, as can weakness from any cause, lack of normal balance control, but cannot beget, during rest, rotary vertigo. Rotary vertigo, then, can come only from bilaterally unequal or unsymmetrical excitations of the coordinating nervous mechanisms. This is normally possible only through the action of the vasomotor nerves.

The vasomotor nervous system is the great body tone maintainer, and through its control, variations in blood-pressure, nutrition, temperature, etc., are kept within certain bounds. The temperature gradients within the semicircular canals and utricle depend mainly on the size of the labyrinth vessels, and therefore unstable vasomotor phenomena in these vessels will affect tonus poise. Unsymmetrical vasomotor phenomena are common in many patients vertiginously inclined. Vasomotor influences anywhere along the coordinating tracts may cause vertigo, but I maintain that unless these influences be bilaterally unequal it is inconceivable that vertigo will result.

It can be demonstrated by careful rotation and bilateral caloric tests that every subject of vertigo presents a changed and bilaterally unequal sensibility to these labyrinth stimulants. This sensibility may be more marked in one stimulation complex, than in another, and is explainable by the theory of tonus maintenance I have outlined.

Finally I desire to call attention to the fact that within the animal body there exists no canal or system of canals wherein the circulation of fluid is possible that such fluid is in a state of quiescence, and it is improbable that the static labyrinth should prove an exception to this rule. The endolymph must therefore be in constant motion, maintain a stress on the cupulae, and originate the tonus emanating from the ampullae of the semicircular canals.

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ABSTRACT OF DISCUSSION

DR. G. W. MACKENZIE, Philadelphia: I hardly consider that Dr. Fowler has proved his case and I offer some suggestions. That there is a tonus no one will doubt, for in the event of sudden destruction of the inner ear on one side we observe the effects of the tonus of the other side with nystagmus and vertigo. If galvano-electricity is applied, using the anode, it causes nystagmus in the opposite direction with vertigo. So no doubt there is a tonus that can be measured in milliamperes. Barany and others have been working for years to try to locate just where this tonus is. In the event of acute destruction of one side, even when the internal ear has been removed, we are still able to stimulate the crippled side, showing that there is some tonus beyond the labyrinth. That is one point I offer. Another is that if this constant endolymph flow existed we could not explain a case I cited several years ago before this Section, in which case the external semicircular canal had had a fistula which afterward healed or closed after a more radical mastoid operation had been performed. According to the turning test, a typical reaction was obtained that corresponded to destruction of the inner ear. Had there been such a current as described by Dr. Fowler, the tonus ought also to have been proportionately destroyed, whereas, by reason of the normal galvanic reaction which was present, it was not. Now we do know that the tonus cannot be located in the greater brain, for in animals in which the greater brain has been extirpated the animal reacts the same to all stimuli as in the normal. I think we have just as much reason to locate it in the cerebellum, which regulates the tonus of other parts of the body.

DR. E. P. FOWLER, New York: There are, of course, many points that come to mind in the consideration of this subject. I tried to concentrate the argument on the tonus arising from the canals. There is no question, as Dr. MacKenzie has said, that all factors that have to do with body balance may play a part in the matter of tonus, and I so stated. If one labyrinth is destroyed balance is soon regained. This can occur only if the remaining labyrinth impulses are opposed or balanced by others arising from these factors, or from a throttling of the impulses from the live labyrinth. I have asked all interested in this work to mention any combination of circumstances that this theory will not cover; of course, it is only a theory, and all theories have certain apparent difficulties. So far I haven't encountered a theoretical or actual condition which we cannot explain by this theory. It is at least founded on a solid physiologic basis, and I simply offer it as a theory until further investigations shall prove it true.

THE ATROPIN TREATMENT OF DYSMENORRHEA

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In a paper[1] presented to the Section on Obstetrics, Gynecology and Abdominal Surgery at the recent session at Atlantic City, I referred to the possibility that certain cases of uterine bleeding are due to, or at any rate, are associated with, disturbances in the so-called vegetative nerve system. The evidence which I then offered for the support of this view applies with equal force to the causation of other menstrual disturbances as well as uterine bleeding.

In the case of the latter symptom, no important therapeutic result has as yet been yielded by theoretical considerations as to the influence of the vegetative nerve system on the menstrual function. On the other hand, it is interesting to know that, in the case of dysmenorrhea, a definite method of treatment seems to have been suggested by recent studies showing the great importance of the vegetative nerves in visceral physiology. I refer to the treatment of dysmenorrhea by atropin. A number of articles on this subject have appeared in the German literature, but, so far as I am able to learn, it has received little or no attention from American gynecologists.

1. Novak, Emil: The Pathologic Physiology of Uterine Bleeding, THE JOURNAL A. M. A., Aug. 22, 1914, p. 617.

The treatment of one form of dysmenorrhea in particular is notoriously inadequate and unsatisfactory. I mean that type which is observed so characteristically in young nulliparous women, and which is so frequently associated with scanty menstruation and sometimes with sterility. We are all familiar with the picture. The pain, often exaggerated by the nervous or hysteric temperament of the patient, is sometimes extremely severe, so that the recurrence of the monthly periods is looked forward to with dread. As a rule the pain is characterized as cramp-like or colicky, beginning a day or two before the actual onset of menstruation, and ceasing when the flow is well established. This form of dysmenorrhea is spoken of variously as "spasmodic dysmenorrhea," "essential dysmenorrhea," etc. Its occurrence is not dependent on the presence of any demonstrable pelvic disease, although in a considerable proportion of cases, the generative organs present a condition of underdevelopment or perhaps of actual infantilism. By some (Herman) the use of the term "dysmenorrhea" is limited to the type of menstrual pain just described, the affection being looked on as a distinct entity. While I do not agree with those who would give the term such a restricted application, it is not my present purpose to enter into a discussion of the varieties of dysmenorrhea and their etiology. Suffice it to say that the atropin treatment, of which I wish to speak, is indicated only in cases of dysmenorrhea of the so-called spasmodic type.

UNSATISFACTORY PRESENT TREATMENT OF SPASMODIC DYSMENORRHEA

The many plans of treatment, medicinal and operative, which have in the past been advocated in the treatment of this troublesome condition indicate that none has been eminently successful. The fact that even hysterectomy is sometimes resorted to shows to what desperate straits gynecologists are sometimes driven in the management of such cases. Of the medicinal agents used for the relief of this form of menstrual pain, those most in vogue are the coal-tar products, the bromids, hydrastis and viburnum prunifolium. None of these has given very striking results. The two drugs which relieve the pain in these cases with greatest certainty and swiftness — morphin and alcohol — possess disadvantages which should practically preclude their employment.

Among the operative measures advised for the relief of the condition, that most commonly resorted to is dilatation of the cervical canal, most frequently by the rapid method. While in a certain proportion of cases this operation is followed by relief from pain, the improvement is often only temporary. Equally unsatisfactory have been the results of the various operations which have been devised by Dudley, Pozzi and others for permanently overcoming the cervical stenosis which many hold responsible for the suffering in these cases. This is not surprising when one considers that there is now little justification for the old theory that dysmenorrhea is due to mechanical obstruction to the exit of menstrual blood from the uterus.

CAUSE OF SPASMODIC DYSMENORRHEA

Without reviewing the various theories as to the causation of spasmodic dysmenorrhea, it may be said that the explanation accepted by the largest number of investigators is that the pain in these cases is due to a colicky contraction — a spasm — of the uterine musculature, so that the term "menstrual colic," suggested by Stolper,[2] is not inappropriate. The exact mechanism involved in this labor-like contraction of the uterine muscle is not known. The numerous "causes" given by text-book writers — hysteria, neurasthenia, anemia, overwork, etc.—are only predisposing factors. It may be added that there are some who consider that the pains are due to "vascular crises" rather than to muscular contractions. The problem is thus in somewhat the same status as that of the mechanism of intestinal colic, which some also consider vascular rather than muscular in origin. The weight of evidence, however, points to muscular spasm as the cause of the form of dysmenorrhea we are now discussing. This view receives perhaps its fullest justification from a consideration of those cases of dysmenorrhea in which the expulsion of blood-clots is accompanied by distinctly labor-like contractions of the uterus. It must be admitted, however, that in most instances of spasmodic dysmenorrhea the menstrual flow is unclotted, and usually rather scanty.

THE ATROPIN TREATMENT

The use of atropin in the treatment of spasmodic dysmenorrhea is based on the fact that atropin diminishes the irritability of the autonomic nerve-endings in the uterus. In 1910, Drenkhahn[3] reported remarkable results from the injection of a solution of atropin directly into the cervical canal (1 mg. of atropin in 1 c.c. of water). If a speculum or syringe be not at hand, he advised the introduction of a tampon saturated with the atropin solution (1 per cent. strength). This plan of treatment Drenkhahn states he had followed for fifteen years, basing it originally on the experimental work of Schindler,[4] who showed that atropin has a direct action on the uterine muscle.

The method was taken up by Novak[5] of Vienna, who was struck by the fact that many women with increased irritability of the autonomic nerve system suffer with dysmenorrhea. In accordance with the *Krampftheorie* he suggested that the dysmenorrhea is due to the increased irritability of the autonomic nerve endings in the uterus. Novak administers the atropin in pills containing 0.5 mg. each, three being given each day, beginning just before the expected onset of menstruation. His preference for the administration of the drug by the mouth is a wise one, for the results appear to be just as satisfactory as by Drenkhahn's method, while he thus avoids the slight danger of infection associated with the latter. Novak's method is obviously less disagreeable, especially in the case of virgins.

Thirty-eight cases were reported by Novak, in thirty of which the results were distinctly favorable. All these patients had suffered with "crampy" pains, except one in whom the pain was rather continuous, and one in whom the character of the pain is not mentioned. In the thirty favorable cases the pain either disappeared entirely or else became insignificant. The less characteristic symptoms which so frequently accompany the spasmodic pain — backache, bearing down in lower abdomen, general lassitude, etc. — were not influenced by the atropin, which seemed to exert a

2. Stolper, L.: Wien. klin. Wchnschr., 1914, xxvii, 46.
3. Drenkhahn: Zentralbl. f. Gynäk., 1910, xxxiv, 1531.
4. Schindler: Arch. f. Gynäk., 1909, lxxxvii, 607.
5. Novak, J.: Zentralbl. f. Gynäk., 1911, xxxv, 576; Wien. klin. Wchnschr., 1913, xxvi, 2068.

special effect on the colicky pains. In one case the result was rather indefinite, the patient being better, but not strikingly so. In seven cases the treatment failed to relieve the pain. Among these seven were the two mentioned above as atypical, that is, not suffering with the spasmodic pains of typical "menstrual colic."

EXPLANATION OF FAILURES

Novak is inclined to believe that failures, when they occur, are due to insufficient dosage. This would seem to be in conformity with the experimental work of Kehrer,[6] who found that in small doses atropin stimulates the uterine muscle, while in large doses it inhibits it.

Stolper, who has also employed the atropin method in a large number of cases, offers a different explanation for the failures which occur in a certain proportion of cases. He asserts that atropin is very efficient in those cases in which the dysmenorrhea is accompanied by other vagotonic symptoms. In a certain number of dysmenorrheics, however, vagotonic symptoms are absent, and, according to Stolper, there may even be symptoms indicating a heightened irritability of the sympathetic system (sympathicotony). As a means of clinical differentiation between these two groups, he lays much stress on a study of the blood-pressure. He lays down the rule that women with a normal or slightly raised blood-pressure react most promptly to atropin, while when the blood-pressure is greatly raised there is apt to be no response to the administration of atropin. The blood-pressure must be measured in the intermenstrual interval, not during menstruation or during the premenstrual period. Stolper, I may add, administers the drug either in suppositories (0.001 gm.) or by subcutaneous injection (0.00075 gm.).

PERSONAL EXPERIENCE

My own experience with the atropin treatment of spasmodic dysmenorrhea has been most encouraging. In the frequent cases of young unmarried women in whom pelvic examination is obviously undesirable, and who present the classic picture of spasmodic pain recurring with each menstruation, the atropin treatment is indicated without the preliminary of pelvic examination. In my own cases I have followed the plan of Novak, though I have frequently administered somewhat larger doses than those recommended by him. My experience has been that the cases which respond most favorably are, speaking generally, those in which the atropin has been pushed to the point of tolerance. The plan has been to commence the administration of the drug about two days before menstruation is expected to appear, and to continue its use until the second or third day of menstruation, depending on the usual duration of the pain. Patients differ, of course, in the degree of tolerance to the drug. Ordinarily, about $\frac{1}{100}$ grain is given three times a day, unless some pain appears, in which event, if there are no symptoms of atropin saturation, the doses may be given somewhat more frequently. Many patients complain of dryness of the throat, itching of the skin, and sometimes even disturbed accommodation, in which case it may be necessary to lessen the dosage somewhat. When it is desired to study the effect of the atropin on dysmenorrhea, it is best to administer it alone, as in tablet form. In some cases, however, I have combined it with various other drugs of analgesic nature, such as aspirin. Further than the occasional symptoms due to overstepping of the patient's atropin tolerance, I have observed no bad results of any kind.

My purpose in writing this paper is to call attention to this method of treatment rather than to report my own results. My experience is still comparatively small, and since many of the cases are of very recent date it is scarcely suitable for detailed report. The results in the thirty or more cases of spasmodic dysmenorrhea which I have treated with atropin have been very encouraging—so much so as to impel me to further employment of the method. While there have been some failures, there have been, on the other hand, some strikingly successful results. For the failures I have no explanation to suggest other than those quoted above from Novak and Stolper. It is hardly necessary to add, in conclusion, that it would be illogical to expect good results from the administration of atropin in cases of dysmenorrhea — using the term in its broader sense — associated with definite pathologic lesions in the uterus or adnexa. In such cases the logical treatment of the menstrual pain is the removal or treatment of the causative lesion.

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6. Kehrer: Arch. f. Gynäk., 1907, lxxxi, 160.

THE ENDOWMENT OF MOTHERHOOD*

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In this day, when the laity is discussing eugenics, and legislatures are enacting laws for the betterment of the race, it behooves us as medical men to consider the value of the potential mother and her unborn babe as a national asset and ascertain wherein their status can be benefited. The crux of the situation is the safety of the mother during pregnancy, labor and the puerperium.

The latest reports of the Bureau of Census on mortality statistics[1] show that slightly more than 42 per cent. of the infants dying under one year in the registration area in 1911 did not live to complete the first month of life, and that of these 42 per cent., almost seven-tenths died as the results of conditions existing before they were born, or of injury and accident at birth. Of those that lived less than one week about 83 per cent. died of such causes, and of the number that lived less than one day 94 per cent. died of these causes.

In the registration area of the United States, embracing 40.4 per cent. of the population, from 1901 to 1905, the yearly average puerperal mortality from all causes was 4,692, and in the five years ending 1910, with 48.9 to 58.3 per cent. of the population, the average death-rate was 7,219. If we divide the mortality into two groups: (1) accidents of childbirth, which includes deaths from abortion and miscarriages, placenta praevia, eclampsia, mania, post-partum hemorrhage and other accidents of pregnancy and labor including ectopic gestation, rupture of the uterus, adherent placenta and some cases of pelvic deformities, and (2) puerperal infection, we find that in the quin-

* President's address, read at a meeting of the Washington Obstetrical and Gynecological Society.

1. West: Pre-Natal Care, Children's Bureau, Dept. of Labor.

quennial period ending in 1905, the yearly average death-rate from puerperal infection was 2,057, or 44 per cent., and in the similar period ending in 1910 the average mortality from the same cause was 3,224, or 44.6 per cent.[2] In 1911, with 63.1 per cent. of the population in the registration area, the mortality from all causes incident to childbirth was 9,156, and of this, 4,376, or 47.7 per cent., were due to puerperal infection. In 1912, with 63.2 per cent. of the population in the registration area, the total death-rate was 9,035, and of this, 3,905, or 43.2 per cent., were due to puerperal infection. The minimum annual mortality from puerperal infection since 1900 was 39.7 per cent. (1906), and the maximum 47.8 per cent. (1911), while the general average was 44.8 per cent.

Since, in the last census (1912), not quite two-thirds of the population is represented in the registration area, and there occurred 9,035 deaths of mothers in childbirth, it is more than likely that if the entire country was registered, at least 15,000 if not more maternal deaths would be reported annually.

The figures published annually by the Registrar-General show that the mortality from puerperal infection in the British Isles has diminished in the last forty years and that in some parts of the kingdom there is evidence that up to a recent date the disease has shown a tendency to increased frequency. Lea[3] states that these facts constitute a grave reproach to the present-day practice of midwifery and are deserving of searching investigation. In five years, 1851 to 1856, the puerperal death-rate from all causes was 4.9 per thousand, and in the five years ending in 1906 it was still 4.2 per thousand. The mortality from puerperal infection varies between 2 and 2.5 per thousand. These figures do not include deaths from all causes dependent on or associated with pregnancy and the puerperal state. If these are added, the total mortality is raised to 5.09 per thousand.

The general septic mortality in Germany, according to the figures recorded by Von Herff, still amounts to 2 per thousand, although this shows a marked improvement on the figures of former years.

In the kingdom of Saxony the death-rate from infection from 1883 to 1886 amounted to 4 per thousand. In 1887 to 1894 it was 2.4 per thousand, and in 1901 to 1903 it was only 1.5 per thousand. The statistics from other parts of the German Empire show a reduction also, amounting in some districts to 50 per cent.

The puerperal mortality of Basle appears to be the lowest hitherto obtained; thus out of 10,497 births in three years, 1901-1903, the total deaths from puerperal infection amounted to 15, a mortality of 0.14 per cent. These figures afford a striking illustration of the success which follows the complete organization of the attendance on puerperal women, and the cooperation of nurses, medical men and the maternity hospital.

Why women at this day are permitted to entrust themselves to the hands of ignorant and untrained persons at the most important period of their lives would seem incredible but for the fact that it is actually true. It is not that we are more capable than our predecessors, for comparatively few epoch-making measures have been evolved in obstetrics in the last half century, but it is the immense advantage we possess in the added knowledge of asepsis and antisepsis and preventive medicine, owing to the developments in modern bacteriology.

It is more than three-quarters of a century ago since Holmes in his classical essay crystallized the prevailing views in support of the contagiousness of puerperal fever (infection), and the genius of Semmelweis illumined its etiology, and by his method of prevention of infection blazed the way for the development of the well-nigh perfect technic of to-day. It is over fifty years since that grand savant, Pasteur, established the correlation of germs with disease and proved that wound infection and puerperal infection were identical; and yet, notwithstanding these epoch-making advances of knowledge in the prevention of infection, the mortality and morbidity in parturition and the puerperium, in the general practice of obstetrics, has been but little diminished since the advent of the antiseptic era.

That thousands of women die every year from puerperal infection and accidents of childbirth, that many thousands more pass into the care of the gynecologists, and that one-third of the blindness in the world is the result of ophthalmia neonatorum are true and convincing proofs that obstetrics is wofully lacking in the careful study and attention it so rightly deserves.

How shall we lessen this frightful mortality and morbidity? To use a commercial phrase let us take stock and see wherein we can minimize the dangers that beset pregnancy, labor and the puerperium. While much of the etiology and pathology of the diseases of pregnancy are unknown, yet we have many measures of prevention at our command that lack universal application because of ignorance, carelessness and faulty judgment. The toxemias, ectopic pregnancy, pyelitis, hydatidiform degeneration of the chorion, placenta praevia, tumors, deformities of the pelvis and the various dystocias are, in the majority of instances, recognizable to the careful and painstaking physician.

Bacteriology has been of incalculable benefit in revealing the protean character of puerperal infection, and that it is mostly of external origin and due to ignorance or carelessness and, therefore, is largely preventable. Asepsis has made possible undreamed of achievements in surgery and obstetrics. The surgical and mechanical aspects of labor have during the last quarter of a century made great strides, and obstetricians have formulated definite principles governing the various complications that present themselves during the puerperal state.

The brilliant results of cesarean section, abdominal and vaginal, in contracted pelves, certain cases of placenta praevia and eclampsia, and in certain borderline cases that before the era of asepsis were deliverd by forceps or version, frequently resulting in the death of the child and mutilation of the mother, are now of such frequent occurrence that they excite little attention.

Symphyseotomy, and its recent variation, pubiotomy, are employed by some obstetricians in medium contractions of the pelvis, though as independent procedures they are being supplanted by the more advantageous cesarean section. They still have a limited field of application in impacted posterior face and cephalic cases and then usually as an adjuvant to forceps or version.

The induction of labor too, in contracted pelves, is yielding to cesarean section because of the increased likelihood of the survival of the infant. Yet, even with this abridgment, it has a large sphere of employ-

2. Reports of Bureau of Census, U. S., 1900-1912.
3. Lea: Puerperal Infection, London, 1910.

ment in the diseases that menace the life of the mother, as toxemias, placenta praevia, uncompensated heart lesions, some cases of tuberculosis, chorea, pernicious anemia and hydatidiform mole.

The forceps is the most valuable and most abused instrument in the obstetric armamentarium. When the indications for its employment are observed and application properly made, the chances of the child are increased and the suffering of the mother frequently shortened.

Version is one of the oldest and most serviceable of the obstetric procedures. When skilfully performed it is of great value in dissolving abnormal presentations, controlling hemorrhage in placenta praevia and securing immediate delivery.

Manual correction of defective rotation, and manual, bag and instrumental dilatation of the cervix are employed in suitable cases to promote and effect delivery.

Pituitary extract has proved to be of value in reinforcing flagging pains. Its intermittent action, simulating the normal action of the uterus, is of service in inertia. It should be administered only when there is no disproportion between the child and the pelvis and after the cervix is completely dilated. Neglect of these precautions may cause extensive lacerations of the cervix and even rupture of the uterus. It does not *initiate* labor pains but augments them.

The recent findings of Abderhalden, demonstrating the cleavage of placental proteins by ferments in the blood of the host during pregnancy, is a valuable addition to our knowledge of physiologic chemistry, and it is to be hoped that this line of investigation may solve the much vexed problem of toxemia and furnish an effective remedy against this terrible scourge.

Acidosis, when present in pregnancy, indicates toxemia and not nephritis unless a toxemia has been superadded. The urobilinogen test is of service in this connection in that a positive reaction is indicative of toxemia. It has long been observed clinically that pregnant women suffering with chronic nephritis rarely have eclampsia.

The long-cherished hope of a specific remedy for puerperal infection has not been realized. Serum and vaccine treatment have proved unavailing. Our principal reliance still must be in prevention, and when it is present, on general, supportive and surgical measures.

The importance of the supervision of pregnancy cannot be overestimated. Many abnormalities are detected by a painstaking examination during this period. Pelvimetry and palpation give valuable data not only of the size but also of the shape of the pelvis. Methodical urinalyses will detect toxemia and give timely warning of impending danger, while a carefully elicited history will furnish much important data concerning previous pregnancies and labors.

These are the principal resources, the judicious use of which, together with careful technic, enables the obstetrician, in hospital and private practice, to reduce the mortality and morbidity of parturition to the minimum.

The statistics of maternity hospitals afford the most striking evidence of the value of modern aseptic and antiseptic methods. In former years the death-rate in these institutions amounted to from 3 to 5 per cent. and at times to as much as from 8 to 10 per cent. At the present day severe infection has almost been entirely abolished, and the mortality has been reduced to a small fraction of 1 per cent. (from 0.1 to 0.2).

The figures of the York Road Lying-In Hospital,[3] during sixteen years, show that in 8,376 deliveries there were no deaths from infection.

In the Rotunda Hospital, Dublin, during the year 1907-1908, 2,060 women were confined without a fatality from infection arising in the hospital.

At the Clinique Baudeloque in Paris, in over 3,000 births occurring annually, the total mortality from infection during the last five years amounted to less than 0.09 per cent.[3]

In the Johns Hopkins Hospital, in the first 5,000 cases delivered, 2,750 being outdoor patients, the total mortality was fifty-five, a ratio of 1.1 per cent.[3] The death-rate from infection was 0.42 per cent., and of these patients at least one-half were infected before admission to the hospital.

In 9,090 patients cared for in the Columbia Hospital of Washington, D. C., from 1876 to 1912 the total mortality was 120, a ratio of 1.3 per cent. The death-rate from infection was 0.28 per cent. and of these twenty-six women, six were infected before admission.

Why is the standard of obstetrics in general practice so low? The following have been imputed to be the responsible agents: ignorance and indifference of the laity; that pregnancy and labor are normal processes and do not require experienced help; the midwife and her bargain counter inducement, and the laxity of the medical profession. While these are admittedly factors in the final analysis, lack of training of the medical graduate in practical obstetrics is the principal cause.

The results of Williams' questionnaire[4] on the midwifery problem in the United States showed that the present standard of teaching obstetrics, particularly clinically, is far from satisfactory. Many of the schools are inadequately equipped for the teaching of obstetrics properly, only one having an ideal clinic; many of the professors are poorly prepared for their duties and have little conception of the obligations of a professorship; many of the teachers admit that their students are not prepared to practice obstetrics on graduation; one-half of the answers state that ordinary practitioners lose proportionately as many women from puerperal infection as do midwives and that reform is urgently needed, and can be more readily accomplished by radical improvement in medical education than by the almost impossible task of improving midwives.

Surgery is made the intensive course of the curriculum to the disadvantage of general medicine and obstetrics, which are certainly of more *vital* importance to the recent graduate. More than 50 per cent. of the present-day graduates are aspiring to do surgery, and the number is increasing. Its spectacular aspect and the apparent ease with which the skilled surgeon does his work lure to disaster the unwary and untrained operator whose principal assets are the hemostat and self-assurance. The boon of anesthesia and asepsis has not been an unmixed blessing, for it has made possible the commission of innumerable tragedies under the guise of surgery. Those who have control of hospitals know that the average intern is so enamored of the knife that it is difficult to make him familiarize himself with laboratory and other non-surgical duties. It is no great achievement to be able

4. Williams, J. Whitridge: Medical Education and the Midwife Problem in the United States, The Journal A. M. A., Jan. 6, 1912, p. 1.

to do the mechanical part of surgery; any tyro with nerve can do that; but it is a fine accomplishment and a rare one, to be acquired only by experience, keen observation and sound judgment to think and act surgically. What is said of surgery applies with equal emphasis to operative obstetrics. Special aptitude and training are requisite for efficient work. Every obstetrician knows that a large share of his consultation practice is not so much to give counsel what to do but to correct an error of judgment or execution.

Some will argue that the recent graduate is no more capable of taking care of a serious organic disease than to perform a surgical operation. While that may be true, the conditions surrounding each are apt to be different. The operator is often the sole arbiter as to his competency, while the physician, because of the nature of his work, which, as a rule, is subject to deliberation, can better safeguard the patient's interest. If the physician be incompetent or unsatisfactory a consultation or retirement from the case is likely to suggest itself. Surgery, on the other hand, frequently calls for prompt and decisive action, and if there has been an error of judgment or execution the injury done is often permanent.

err from ignorance when human life and health are involved is lamentable, but when we possess the light and neglect to avail ourselves of the knowledge it is inexcusable, aye, often criminal. Yet we have known for several decades that puerperal infection is a preventable disease, and in spite of this fact quite 50 per cent. of the mortality in childbirth is due to this cause. What is needed then is for the colleges to take cognizance of the glaring omissions in the teaching of this important branch by providing ample facilities for the student actually to assist and attend patients during labor and also be instructed clinically in the supervision of pregnancy and the puerperium by competent teachers. A potent factor in much of the inferior and meddlesome midwifery practice owes its inception to the faulty and inadequate training of the student under the direction of an inexperienced intern, or his initiation in the outdoor confinement cases without proper supervision and facilities. No surgeon would elect to perform an operation except under the most favorable environment, and no obstetrician should permit his students to be trained in a haphazard and indifferent manner. Clinical obstetrics is the most exacting and onerous branch of medical teaching, and efficient

MORTALITY IN THE PUERPERAL STATE (PREGNANCY, PARTURITION AND LACTATION)

	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912
Accidents* of pregnancy (abortion, miscarriage, ectopic gestation, tubal pregnancy, etc.)	526	526	535	570	579	537	762	757	772	834	877	908	863
Puerperal hemorrhage	210	287	284	341	360	413	454	465	425	357	754	851	923
Other accidents† of labor (cesarean section, forceps application, breech presentation, symphyseotomy, difficult labor, rupture of the uterus in labor, etc.)	236	306	283	280	321	286	469	471	598	788	820	911	842
Puerperal septicemia	1,769	1,882	1,813	1,992	2,291	2,309	2,622	2,908	3,271	3,427	3,892	4,376	3,905
Puerperal albuminuria and convulsions	671	803	768	929	1,075	981	1,348	1,470	1,619	1,706	1,824	2,094	2,174
Puerperal phlegmasia alba dolens, embolus and sudden death	5	1	2	5	3	7	32	8	13	23	230	266	276
Following childbirth (not otherwise defined)	689	488	478	452	479	542	654	638	643	650	53	48	41
Puerperal diseases of the breast	—	1	1	—	1	2	—	2	3	6	5	2	8
Total deaths	4,106	4,314	4,164	4,569	5,109	5,977	6,641	6,719	7,344	7,791	8,455	9,456	9,035
Percentage of sepsis	42.1	45.9	43.5	43.8	44.8	45.0	39.7	43.3	44.5	44.0	46.0	47.7	43.2
Percentage of population	40.5	40.3	40.4	40.4	40.4	40.4	48.9	49.2	52.5	56.1	58.3	63.1	63.2

* In the sense of conditions or operations dependent on pregnancy or labor, not "accidents" from external causes.
† Term not used in invidious sense.

A promising augury of the future of medicine is the advanced requirements for matriculation, the lengthened course and the elimination of the low grade colleges. The enforcement of the high standards of medical education and ethics should add to the proficiency of the profession, but they will by no means cure its most besetting evils, charlatanism and quackery. The more stringent the requirements for the legitimate practice of medicine are made the more certain is the harvest of the unscrupulous, who thrive on ignorance and credulity.

It is my firm conviction that the next move in the line of progressivism should be the revision of the curriculum. Surgery has been, in recent years, featured more and more at the expense of the other branches, particularly obstetrics. Surgical work is largely elective, requires special aptitude, a basic knowledge of anatomy, physiology, pathology, bacteriology and general medicine, and a discerning judgment which can be obtained only by a wide and varied experience under competent supervision. The graduate course in surgery, therefore, should be devoted to the study of its principles and diagnosis, while its practice should be regulated by postgraduate efficiency. Much of the time spent in the amphitheater could be more profitably devoted to the general and obstetric wards.

The most glaring default of medical teaching is the paucity of time and attention that is given to obstetrics. Its present standard is so low that it is a disgrace. To service can be obtained only by a reasonable compensation.

The college curriculum should be revised so as to fit men to do the greatest good to the race. Obstetrics and general medicine should be intensively taught in the graduate course, and the practice of surgery and gynecology, which are largely elective, should be restricted to postgraduate teaching.

This is the era of specialism and rightly so, for the rapidly widening horizon of the science and art of medicine make it impossible for one mind to encompass the ever-broadening scope of its manifold developments and applications. It is likewise, however, an era of hysteria, distrust and commercialism. The profession of medicine is essentially philanthropic, but its history shows that many of its followers have ever been actuated by cupidity rather than by altruism. Surgery, like obstetrics, is suffering from incompetent and untrained operators and reform is urgently needed. The advanced standards of medical education and the ultimate standardization of the hospitals, together with the aid or control by the state, whose duty it is to conserve the health of its people, should greatly elevate the practice of medicine, obstetrics and surgery, but the morale of the profession will depend on its members recognizing their limitations and giving their best endeavors to the relief of suffering humanity.

Obstetrics is the most arduous, least appreciated, least supported, and least compensated of all the branches of medicine. Its dignity and importance will

never be recognized as long as the incompetent female and male midwives with their bargain counter inducements are placed on an equality with the trained practitioner. That statistics may show that the results of the general profession are little if any better than those of the midwives is beside the question and proves that the standard of teaching of obstetrics is low, very low, and needs to be radically improved.

Recently the President of the United States issued a proclamation setting apart a day each year as a public expression of our love and reverence for the mothers of the country. It is fitting, then, that the medical profession should awaken to its sense of duty to the state and the family by inaugurating a nation-wide propaganda that shall have for its purpose the teaching of the laity that the long-cherished fallacy that pregnancy and labor are normal physiologic conditions and therefore require no special care, in the light of the clinical fact that normal pregnancy and parturition are the exception, must be abandoned, and that henceforth the proudest and noblest privilege of woman—motherhood—shall be zealously guarded and cared for by trained physicians and not by ignorant midwives, male or female.

The peroration of Oliver Wendell Holmes in his "Essay on the Contagiousness of Puerperal Fever" so beautifully expresses the duty of the physician to motherhood that I quote it *in extenso:*

> It is as a lesson rather than a reproach that I call up the memory of these irreparable errors and wrongs. No tongue can tell the heart-breaking calamity they have caused; they have closed the eyes just opened on a new world of love and happiness; they have bowed the strength of manhood into the dust; they have cast the helplessness of infancy into the stranger's arms, and bequeathed it, with less cruelty, the death of its dying parent. There is no tone deep enough for regret, and no voice loud enough for warning. The woman about to become a mother, or with her new-born infant on her bosom, should be the object of trembling care and sympathy wherever she bears her tender burden, or stretches her aching limbs. The very outcast of the streets has pity on her sister in degradation, when the seal of promised maternity is impressed on her. The remorseless vengeance of the law, brought on its vicitim by a machinery as sure as destiny, is arrested in its fall at a word which reveals her transient claim for mercy. The solemn prayer of the liturgy singles out her sorrows from the multiplied trials of life, to plead for her in the hour of peril. God forbid that any member of the profession to which she trusts her life, doubly precious at that eventful period, should hazard it negligently, unadvisedly, or selfishly.

2426 Pennsylvania Avenue, N. W.

Finding Fleas on Plague Rats.—The method of combing rats for fleas—particularly plague-infected rat fleas—presents certain disadvantages which have been obviated by the following method: From several tests it was found that fleas began to leave a killed rat as early as fifteen seconds after death and all had left the body a little more than two hours and fifteen minutes afterward. We therefore killed the rat by cephalotripsy and immediately placed the body on a glass-rod grating over a collection of water in a very large glass jar or the inverted cover of a garbage can; either one will answer the purpose. The fleas soon begin to leave the rat's body and drop into the water, and may be conveniently collected by means of a medicine dropper. We have obtained higher counts in this way than by chloroforming and combing or by any other method. C. F. Mason, *Rept. Dept. of Health*, Panama Canal.

THE AMINO-ACID CONTENT OF THE BLOOD AND SPINAL FLUID OF SYPHILITIC AND NON-SYPHILITIC INDIVIDUALS *

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Wide variations in the amino-acid content of the blood and spinal fluid of patients with syphilis have been reported. As these variations far exceeded any ever seen experimentally in animals even under most abnormal conditions, it seemed advisable to investigate the question. This communication reports the results of the quantitative determination of amino-acid nitrogen in the blood and spinal fluid of normal and syphilitic individuals.

In 1913, D. M. Kaplan,[1] and Kaplan and McClelland[2] described what they entitled "A Quantitative Chemical Reaction for the Control of Positive Wassermann Reactions." The reaction described was merely the quantitative estimation of amino-acid nitrogen according to the method of Van Slyke.[3] According to Kaplan and McClelland the amino-acid nitrogen of the blood is diminished in patients with syphilis, and the quantitative determination of amino-acid nitrogen in the blood may be used as a diagnostic procedure in doubtful cases. Kaplan[4] reports determinations of amino nitrogen in the blood of 109 patients. His results varied between 0 mg. and 15.716 mg. nitrogen per hundred c.c. of blood. Of the 109 patients fifty-one were clinically diagnosed syphilis, while fifty-eight were suffering from other pathologic conditions. In the patients showing clinical evidence of syphilis, the amino-acid nitrogen of the blood varied between 0 mg. and from 2.8 to 2.9 mg., and in the patients clinically negative between 4 and 15.7 mg. per hundred c.c. of serum. Kaplan[4] states that this difference in the amino-acid content of the blood may be used as a point in differential diagnosis. He says:

> If we should offer, for example, a patient whose serum resulted in a positive Wassermann reaction and who presented no physical or historical evidence of syphilis, and whose serum gave an amino content of over 4.0 mg. of amino nitrogen in 100 c.c. of serum, I would, on the strength of 472 corroborative analyses, exclude syphilis on that ground.

In a later paper Kaplan and McClelland[2] report the results of the determination of amino nitrogen in the blood of 229 patients. In this paper they report the amino nitrogen diminished, that is below 2.3 mg. per hundred c.c. in 90 per cent. of forty patients in whom syphilis was clinically present and the Wassermann reaction positive, and in 77 per cent. of thirty-two patients in whom syphilis was clinically present and the Wassermann reaction negative. They give also the results in 117 patients suffering from conditions other than syphilis; of these 117 patients only three

* From the Hospital of the Rockefeller Institute for Medical Research.

1. Kaplan, D. M.: New York Med. Jour., 1913, xcvii, 1172; ibid., 1913, xcviii, 157.
2. Kaplan, D. M., and McClelland, J. E.: New York Med. Jour., 1913, xcviii, 1012.
3. Van Slyke, D. D., and Meyer, G.: Jour. Biol. Chem., 1912, xii, 399.
4. Kaplan, D. M.: New York Med. Jour., 1913, xcviii, 157.

showed more than 7 mg. amino nitrogen per hundred c.c. This is in striking contrast to the previous communication of Kaplan[4] in which forty-four out of fifty-eight gave results in excess of 7 mg. With regard to the determination of amino nitrogen in the spinal fluid Kaplan[4] says:

> In the study of quantitative relationship of the amino nitrogen in cerebrospinal fluid I am at present unable to give any useful data, as the amount of this substance in the fluid is very small and inconstant. The amount varies from 0.3 in the non-luetic and may be present in the luetic to the extent of 3.6 in 100 c.c.

TABLE 1.—AMINO-ACID CONTENT OF BLOOD IN THIRTY-NINE PATIENTS, WITH AMINO NITROGEN CONTENT OF SPINAL FLUID IN FIFTEEN

Diagnosis	Wassermann Reaction Blood	NH_2 Nitrogen in mg. per 100 c.c. Blood	NH_2 Nitrogen in mg. per 100 c.c. Spinal Fluid	Wassermann Reaction in Spinal Fluid, c.c.
Group 1.—Non-Syphilitic				
Rheumatic fever	—	7.0		
Rheumatic fever	—	5.8		
Chronic cardiac	—	4.6		
Lobar pneumonia convalescent	—	4.8		
Lobar pneumonia convalescent (malaria)	—	6.3		
Lobar pneumonia convalescent	—	5.3		
Lobar pneumonia convalescent	—	6.3		
Tuberculosis	—	8.3		
Average	..	6.1		
Group 2.—Syphilis Other than Syphilis of the Central Nervous System				
Primary	++	6.3		
Primary	++	7.1		
Secondary	++	5.4		
Secondary	++	5.7		
Secondary	++	6.0		
Secondary	++	5.7		
Tertiary	++	7.4		
Tertiary	++	9.6		
Tertiary	++	7.2		
Tertiary	++	5.3		
Latent	++	5.7		
Latent	++	4.7		
Latent	++	5.4		
Latent	+	7.2		
Congenital	±	4.1		
Average	..	6.8		
Group 3.—Tabes Dorsalis (Including One Case of General Paresis)				
Tabes untreated	++	6.3	3.1	0.8++
Tabes untreated	—	6.2	2.8	0.4++
Tabes untreated	++	6.8	3.1	0.4++
Tabes untreated	++	5.9	4.5	0.4++
Tabes untreated	—	5.5	3.3	2.0 —
Tabes untreated	++	7.6	2.7	1.0++
Tabes treated	—	8.2	2.6	1.0++
Tabes treated	—	6.0	2.5	2.0++
Tabes treated	++	6.5	3.3	1.0++
Tabes treated	—	4.3	1.7	2.0 —
Tabes treated	—	6.0	4.3	2.0++
Tabes treated	—	6.9	1.7	1.0++
Tabes treated	++	6.8	3.1	2.0++
Tabes treated	—	8.4	3.0	0.6++
Paresis treated	++	6.8	2.0	0.1++
Average	....	6.5	2.9	

These results of Kaplan and of Kaplan and McClelland would appear to possess great theoretical interest and some practical importance. We have, therefore, considered them worth an attempt at confirmation. In this we have been entirely unsuccessful.

Our determinations were made with the usual technic as described by Van Slyke and Meyer[5] for the determination of amino-acids in blood. All determinations were made in duplicate. We have examined the blood in thirty-nine patients, in fifteen of whom a determination of the amino nitrogen in the spinal fluid was also made. The results are shown in Table 1.

It will be seen that in our series there was no such wide variation of the amino nitrogen in the blood (0 to 15.716) and spinal fluid (0.3 to 3.6) as that reported by Kaplan, and that in this series there was no evidence of any diminution of amino nitrogen in the blood of patients with syphilis. The cases have been divided into three groups: (1) non-syphilitic; (2) syphilis other than syphilis of the central nervous system, and (3) tabes, including one case of paresis. The average value for amino nitrogen for the three groups is almost identical, 6.06, 6.8 and 6.5. It will be seen that in this series the syphilitics show actually slightly higher results.

Observations of the amino nitrogen content of the blood and spinal fluid of the same patients at different times have also been made. The results are given in Table 2. The specimens of blood and spinal fluid were always obtained without allowing more than a few minutes to elapse between the two procedures. They may therefore be considered to represent the proportionate content of blood and spinal fluid at a given time. It will readily be seen that within certain limits the amino nitrogen content of both blood and spinal fluid varies at different times in the same individual and that such variations are of practically the same magnitude as those occurring between the different individuals in our series. It will be seen also (Table 2) not only that the absolute amounts of amino nitrogen in blood and spinal fluid vary, but also that the relative amounts of these show a wide variation, in one individual the proportion of spinal fluid amino nitrogen to blood amino nitrogen being at one time 0.75, while two weeks later it was only 0.40, the absolute amount in the blood being practically the same on the two occasions.

TABLE 2.—AMINO NITROGEN CONTENT OF BLOOD AND SPINAL FLUID AT DIFFERENT TIMES

Case No.	Diagnosis	Date	NH_2 Nitrogen in mg. per 100 c.c. Blood	NH_2 Nitrogen in mg. per 100 c.c. Spinal Fluid	Ratio of Spinal Fluid NH_2 Nitrogen to Blood NH_2 Nitrogen	Wassermann Reaction Blood	Wassermann Reaction Spinal Fluid c.c.
1701	Tabes	3/ 3/14	8.3	3.6	0.44	++	0.8++
		3/17/14	6.5	2.3	0.35	+	0.6++
		3/31/14	6.1	3.1	0.49	±	0.8++
		4/ 7/14	5.6	3.6	0.64	—	1.0++
1822	Tabes	3/ 3/14	7.8	3.0	0.38	++	0.4++
		3/17/14	6.5	2.3	0.35	++	0.4++
		3/31/14	6.75	3.1	0.46	++	0.4++
		4/14/14	8.2	2.6	0.32	++	0.6++
1873	Tabes	2/27/14	9.3	4.1	0.44	++	0.8++
		3/17/14	8.1	4.1	3.45	++	0.4++
		4/ 3/14	5.9	4.5	0.75	++	0.4++
		4/17/14	5.8	2.3	0.40	++	0.6++
1794	Tabes	2/27/14	7.6	2.7	0.36	++	1.0++
		3/27/14	6.9	2.0	0.29	++	0.8++
1111	Tabes	3/ 3/14	6.0	2.5	0.42	—	2.0++
		3/17/14	6.6	3.1	0.47	—	2.0++
1098	Tabes	2/26/14	7.5	2.5	0.29	—	0.6++
		4/ 3/14	8.2	2.6	0.32	—	1.0++
Average			7.1	3.0	0.42		

Both tables show very clearly that absolutely no relation exists between the amino nitrogen content of the blood or spinal fluid and the Wassermann reaction

CONCLUSIONS

1. The amino-acid nitrogen of the blood varies within certain definite limits (4.5 to 8.5 mg. per hundred c.c.) in different individuals.

2. A similar variation occurs in the same individual at different times.

3. The amino-acid nitrogen in the spinal fluid in different individuals, and also in the same individuals at different times, varies between approximately 2 and 4 mg. per hundred c.c.

4. The amino-acid nitrogen content of the blood in syphilitics varies within exactly the same limits as in the blood of non-syphilitics. The amino-acid nitrogen content of neither the blood nor spinal fluid of a syphilitic bears any relation to the Wassermann reaction.

5. The conclusion of Kaplan and of Kaplan and McClelland that in patients with syphilis the amino-acid nitrogen of the blood is diminished, and that such determinations may be used as a means of diagnosis, is incorrect.

THE EFFECTS OF COLLARGOL AS EMPLOYED IN PYELOGRAPHY

AN EXPERIMENTAL STUDY*

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Prompted by the report of a number of cases of ill effects, even death, following the injection of collargol into the renal pelvis for roentgenographic purposes, I became interested in the question of whether or not collargol can damage the kidney and can cause death when so injected. With the assistance of Dr. E. W. Schnoor and Miss Elizabeth Byrne, we have attempted to study the question from every angle, employing dogs and measuring the pressure with which the fluid was injected. With the exception of some experiments on pigs' kidneys (removed from the body), reported by Whitman,[1] we are the first to study the question by not only measuring the amount injected, but also observing the effects of varying this quantity, as well as the pressure with which it is injected.

We believe that we are able to show from the lesions found in our experiments on healthy and diseased kidneys injected with various substances (collargol, cargentos and methylene blue) that the majority of the ill effects[2] reported up to the present time have been due to lack of consideration of the fact that when the capacity of the human renal pelvis is exceeded by the amount of fluid injected, and a high degree of pressure employed, the solution is either forced into the loose tissues around the renal pelvis and kidney, or into the renal parenchyma, and from here into the circulation and deposited in various viscera.

TECHNIC

Dogs were employed in all of the experiments. Under ether anesthesia and all aseptic precautions the bladder was opened and a ureteral catheter, which could be boiled, inserted through the vesical orifice of the ureter to be injected, until one could see the location of the eye of the catheter through the intact wall of the ureter above the bladder, in order to watch the first escape of fluid from the catheter. We could thus closely observe the quantity injected into the renal pelvis, and the pressure employed. A mercury manometer, inserted into the column of the solution injected, enabled us to note the slightest fluctuations in pressure. After the fluid had been injected, the catheter was withdrawn and the bladder incision sutured. We were able to imitate perfectly the method of using collargol in the human being. Only one animal out of a total of forty showed evidences of infection, so that we can eliminate this as a factor in interpreting our results. In Experiment 316, as well as in the experimental hydronephrotic and infected kidneys, the solutions were injected directly into the proximal end of the ureter.

PLAN OF THE EXPERIMENTS

The average capacity of the renal pelvis of the dog is from 2 to 2.5 c.c. We thought that by filling the renal pelvis with this amount, or one slightly above it, we could best imitate the gravity method which is correctly held to be least dangerous in the human being. We found that when a buret filled with collargol was raised to a level of 3½ feet above the operating table, the fluid escaped under a pressure of 29 mm. Our first series corresponds to the average gravity injection, as given daily. In the second series the quantity and pressure were increased moderately, and in the third series both were increased considerably, in order to ascertain as closely as possible how much pressure, and the amount of excess in fluid beyond that of the ordinary capacity of the renal pelvis, would be required to force the solutions into the kidney and its vessels. We killed the animals at different periods after the injection, in order to study the question of permanent injury to the kidney and other viscera. In addition to collargol in 10 and 20 per cent. solution, we undertook experiments with cargentos, a salt containing 50 per cent. silver, and also with methylene blue. In our earlier experiments only the injected kidney was examined. It was not known at that time that the collargol entered the blood-current when too much pressure or too large a quantity was employed, since our article[3] of May 2, 1914, was the first publication to describe such an occurrence.[4]

The first series shows that the injection of collargol under a pressure not to exceed 30 mm. will fill the renal pelvis. Only a minimal amount of the collargol enters the kidney parenchyma or infiltrates the peripelvic tissue. An elevation of 3½ feet of a column of fluid causes it to flow at a pressure of 29 mm.; hence this first series proves that the gravity method is the safest one to employ in injecting any solution into the renal pelvis.

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* From the Morris Institute for Medical Research of the Michael Reese Hospital.

* Read before the Section on Genito-Urinary Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

* Because of lack of space this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

1. Whitman: Referred to by Tennant: Ann. Surg., lvii, 888.

2. It will be impossible to quote the published reports of ill effects, owing to lack of space in the present article. Mason (Dangers Attending Injections of the Kidney Pelvis for Pyelography, THE JOURNAL A. M. A., March 14, 1914, p. 839) has reviewed these quite fully, and we will review them in our paper, when published in full.

3. Eisendrath, Daniel, N.: The Effects of Injecting Collargol into the Renal Pelvis, THE JOURNAL A. M. A., May 2, 1914, p. 1392.

4. At the time Experiments 304 and 310 were performed, we had not read the article by Rehn, Jr. (Centralbl. f. Chir., 1914, No. 4), in which he simply mentions the fact that he found collargol in other viscera, but does not give any details and has not published them up to the present time.

SUMMARY OF EXPERIMENTS

Series 1.—Ten per cent. collargol injected under low pressure.

There were six experiments in this series, the quantity injected varying from 2.25 to 3 c.c., that is, just equal or slightly beyond the capacity of the renal pelvis. A distinct resistance was felt when 3 c.c. had been injected, showing that no more collargol could be safely introduced into the renal pelvis. The pressure under which the collargol was injected varied from 13 to 32 mm. The first dog was killed immediately and the other five 24, 48, 72, 96 and 144 hours, respectively, after the injection. The only three findings of value were in the following three experiments:

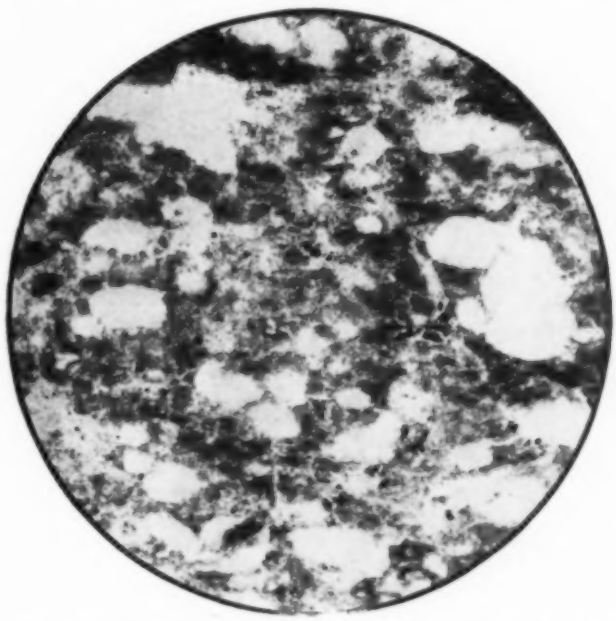

Fig. 6.—Lung from Experiment 327, showing hemorrhagic infarct around collargol.

Experiment 302: 2.75 c.c. at 13 mm. Killed immediately. Small amount of collargol in the interstitial tissue of medulla of kidney.

Experiment 306: 3 c.c. at 20 mm. Killed after 24 hours. Slight peripelvic collargol deposits.

Experiment 332: 2.4 c.c. at 32 mm. Killed 144 hours after injection. Kidney showed marked inflammatory reaction in medulla of kidney, and evidences of slight hemorrhages into lungs and spleen. Hemorrhages into the interstitial tissue of the kidney and into the glomeruli were found so constantly, even when sterile water was injected, that they were thought to be due to trauma rather than to the collargol.

Series 2.—Ten per cent. collargol injected under moderate pressure (30 to 70 mm.).

Experiment 313: 4 c.c. at 50 mm. Killed 24 hours later. Small amount of collargol in interlobular septa of lungs.

Experiment 314: 5.5 c.c. at 45 mm. Killed 48 hours later. Small amount of collargol in interstitial tissue and in blood-vessels of the injected kidney.

Experiment 322: 3 c.c. at 45 mm. Killed 96 hours later. Hemorrhages into renal parenchyma more marked than usual.

Experiment 319: 5 c.c. at 50 mm. Killed 144 hours later. Small amount of collargol in interstitial tissue of the kidney; also present in small amount in lungs and liver.

Experiment 317: 5 c.c. at 52 mm. Killed 20 days later. Small amount of collargol in the kidney, undergoing resorption, and in vicinity of this collargol there are evidences of intense inflammatory reaction. Small amount of collargol in the interlobular septa of lungs. Subcapsular and parenchymatous hemorrhages in spleen.

Experiment 312: 4 c.c. at 47 mm. Killed 30 days later. No collargol found, but injected kidney showed intense inflammatory reaction in the cortex.

COMMENTS ON SECOND SERIES

In Experiment 313, in which the capacity of the renal pelvis was slightly exceeded (4 c.c. at 50 mm. pressure), there was a small amount of collargol deposited in the lungs. In 314 (5 c.c. at 45 mm.), collargol was found both between the tubules and in the blood-vessels of the kidney. In 322, there were evidences of intense inflammatory reaction when the animal was killed 96 hours later. The same is true in 317, in which animal was killed 20 days after injection, as well as in 312, killed 30 days after injection. Evidently the deposits of collargol caused an intense inflammatory reaction, as the result of the presence in the tissues of a foreign substance. In 319, the collargol was forced into the renal blood-vessels and was deposited in small amount in the lungs and liver. In 317, there was collargol in the lungs and evidences of hemorrhages in the spleen.

Series 3.—Ten per cent. collargol injected under high pressure (70 to 140 mm. Hg).

Experiments 304 and 310 were reported May 2, 1914, as a preliminary communication.[4]

Experiment 304: 20 c.c. at 100 mm. pressure. Dog died five minutes after injection was begun. Injected kidney showed many black areas which proved to be collargol lying both within the tubules and in spaces between the tubules, which were of traumatic origin (Fig. 1). Lungs were of a deep black, and sections taken from all lobes showed numerous capillary and larger vessels filled (Fig. 2) with the collargol in the form of emboli. The liver and spleen both contained much collargol. The surface of the liver (Fig. 3) had many yellowish-brown nodules, due to collargol deposits or infarcts and the collargol was found within the lumen of many hepatic vessels (Fig. 4). The spleen and lungs showed in addition to the collargol, many hemorrhages.

Fig. 9.—Kidney from Experiment 329; tubules and glomeruli filled with 20 per cent. collargol.

Experiment 310: 30 c.c. at 100 mm. pressure. Animal died thirty minutes later. There were a number of collargol infarcts in the injected kidney and the microscopic appearance was the same as in 304. The lungs showed much less collargol than in 304, but there was an extensive edema of the lower lobes. The liver and spleen showed evidences of hemorrhages, but contained less collargol than in 304. This was due to the fact that much of the collargol had

escaped into the tissues around the renal pelvis, and thus less entered the circulation than in 304. Death was undoubtedly due in this dog to the acute pulmonary edema, whereas in 304 it was the direct result of so many capillaries being filled by the collargol emboli.

In Experiment 316 the collargol was injected directly into the proximal ends of both ureters, in order to observe the rise in pressure as the quantity injected was increased. The pressure when 5 c.c. had been injected was 48 mm., and rose gradually until it was 98 mm., when 10 c.c. (four times the capacity of the renal pelvis) had been injected. Both kidneys showed the typical collargol deposits and infarcts. In other experiments of this series, in 303 (7 c.c. at 80 mm.) the kidney showed a typical collargol infarct when the organ was removed fifteen minutes later. In 321 (6 c.c. at 94 mm.) the dog died seven days after the injection. The lungs showed extensive ecchymoses on the pleura and pneumonia in the stage of red hepatization in several lobes. The close proximity of a number of particles of collargol to the pneumonic areas (Fig. 5) justifies, we believe, the conclusion that the collargol played an important part in the etiology. In one section the collargol is seen to be adherent to the intima of a vessel close to a pneumonic area. In 310, in which the pulmonary edema was the cause of death, the collargol was, we believe, an irritant. In 327 (Fig. 6) the lung showed numerous hemorrhagic infarcts directly around the collargol deposits in the lung. From the constancy of our findings, there can be no doubt of the direct causal relation of the collargol to all of the acute pulmonary changes.

Experiment 336: Injection of 20 c.c., 10 per cent. collargol directly into the iliac vein. This experiment was to determine whether a substance like collargol would cause death, as in 304, when injected directly into the systemic circulation. The dog died in four minutes; respiration stopped before the heart did. The lungs presented almost the same appearance as in 304, and also a large hemorrhagic infarct. All of the viscera and the blood in the vessels contained the collargol. Sections taken from the lungs showed innumerable blood-vessels (Fig. 7) filled with collargol emboli, as in 304. The vessels of the liver were also filled with the collargol (Fig. 8). This experiment corroborates our 304, showing that death can be caused by the collargol obstructing so many pulmonary capillaries that respiration is impossible.

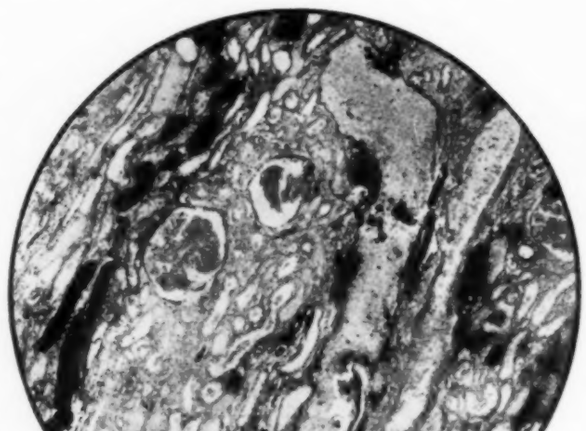

Fig. 10.—Kidney from Experiment 329, showing collargol breaking into vessel.

The occasional clinical use of stronger solutions of collargol led us to inject 20 per cent. collargol in Dog 329. The results were the same as when the weaker solution was employed. The animal died twenty-four hours after 37 c.c. had been injected at 140 mm. pressure. The tubules and glomeruli were filled to an even higher degree (Fig. 9) than in Series 3. In one of the sections the collargol could be seen entering the vessel and lying within it (Fig. 10). Death was due to acute pulmonary edema, and there was much collargol in the interlobular septa, as well as in the liver and spleen.

Series 4.—Cargentos used instead of collargol.

To see how other silver salts which have been recommended as substitutes for collargol would act, we injected cargentos, which contains 50 per cent. silver, into three dogs. In Experiment 326 the animal died twenty-four hours after 17 c.c. of a 10 per cent. solution had been injected at 140 mm. The tubular deposits and large infarcts (Fig. 11) appeared in the same manner as with collargol, and in addition there was a marked inflammatory reaction. The spleen, liver and lungs showed many hemorrhagic areas, and there was a well-marked pneumonia. In Experiment 334 the dog died on the fourth day after 6 c.c. of a 25 per cent. solution had been injected at 80 mm. The pneumonic changes were even more advanced than in 326. In 333 the dog died twenty minutes after 14 c.c. of 25 per cent. cargentos had been injected at 100 mm. In addition to the cargentos forming perfect casts of the urinary tubules (Fig. 12), the lungs contained much of the cargentos.

Series 5.—Collargol injected into kidneys in which experimental hydronephrosis and infection had been produced.

Experiment 327: 20 c.c. of 10 per cent. collargol at 196 mm. injected into ureter of hydronephrotic kidney of three weeks' duration. Animal died in ten minutes. There was a large hemorrhagic infarct in the lungs, and in sections much collargol was found in the lungs, especially near the infarct (Fig. 13). The kidney showed a few collargol streaks, but sections revealed the fact that the tubules and interstitial tissue had resisted the entrance of collargol far better than a non-hydronephrotic kidney. There was comparatively little collargol in the tubules or between them. In Experiment 331 an experimental hydronephrosis and ascending infection had followed implantation of the ureter into the bowel, and injecting its proximal end eighteen days later with 40 c.c. of 10 per cent. collargol at 140 mm. pressure. Animal died twenty-four hours later. Here, again, the kidney resisted the collargol better than a normal one, and the parenchyma contained only a relatively small amount of the fluid (Fig. 13). There were many hemorrhagic infarcts in the lung and pneumonic areas. There was a little collargol in the lungs, liver and spleen.

Series 6.—Methylene blue used instead of collargol.

We thought that neutral substances like 10 per cent. methylene blue might cause the same changes and verified this by injecting it in the same quantities and at similar pressures as were used with collargol and cargentos. The animals died within from five to twenty minutes, and the hemorrhagic infarcts and embolic plugging of the pulmonary vessels resembled in every way those observed with the silver salts.

COMMENTS ON EXPERIMENTS

In Series 1, in which the amount of collargol injected did not exceed the capacity of the renal pelvis, and only enough pressure was used to distend it lightly, practically no deposits in the kidney occurred, and no damage to its epithelium. When the pressure and quantity were increased, as in Series 2, the collargol was found more constantly, either in the kidney or lungs, or both. In 314 it was found in the blood-vessels of the kidney. In animals which lived for some days there was ample evidence that some irritant had been present, and had been the cause of an

intense inflammatory reaction. The more severe effects which collargol and cargentos can cause in both normal and pathologic kidneys are well shown in the remainder of the experiments. There can be no doubt that when more fluid is injected than the renal pelvis can hold, or it is injected with too much force, then the tension within the renal pelvis rises to such an extent that the fluid, whether it be collargol, cargentos or methylene blue, or any other substance sufficiently concentrated, is forced into the interstitial tissue and tubules, and soon breaks into blood-vessels and is carried by the veins to the lungs, and produces either embolism with immediate death, or an acute pulmonary edema, hemorrhagic infarct or a pneumonia. The photomicrograph shown in Figure 12 illustrates how the collargol is forced into the vessels and carried to distant parts. If carried to the liver, spleen, brain and other organs, the collargol is either deposited in the parenchyma or causes infarcts or hemorrhages.

The experimental work of Strassman and Wossidlo will be discussed in detail when this paper is published in full. Rehn's investigations have been published only in a preliminary form. The experiments of these three surgeons were all performed without taking into consideration the question of the pressure with which the fluid was injected. This, as we have attempted to show, is the key to the entire question. In other words, *collargol will not injure either the healthy or diseased kidney if care be taken not to inject more than the renal pelvis can hold.* If this limit is exceeded, or the fluid injected with too much force, serious results may follow, such as (*a*) larger (infarcts) or smaller deposits in the kidney and perirenal or perinephritic tissue; (*b*) infarcts or deposits or hemorrhages into the spleen and liver, and (*c*) various lung changes, such as embolic plugging of the vessels, hemorrhagic infarcts, acute pulmonary edema or pneumonia.

The use of collargol and cargentos in pyelography does not deserve to be condemned. They are perfectly safe aids to a most valuable method of diagnosis, when employed with care. Our experiments clearly show the dangers of injecting any fluid, even concentrated methylene blue, into the renal pelvis when too great a quantity and too much pressure are employed.

30 North Michigan Avenue.

ABSTRACT OF DISCUSSION

DR. W. F. BRAASCH, Rochester, Minn.: Dr. Eisendrath has certainly shown conclusively that collargol or any other solution of colloidal silver, when injected with pressure, can destroy the kidney tissues. In some two thousand clinical cases in which we have employed pyelography, I am not aware of having caused any damage to the kidney by means of overdistention. Any possibility of such danger is obviated by the gravity method. As Dr. Eisendrath has emphasized, if one does not use too much pressure there is no reason why any trauma or destruction of the kidney tissue should follow the injection of the solution. It has been my experience, however, that we do have trouble in certain cases when the injected silver is not drained out afterward. I have seen necrosis in four cases of hydronephrosis in which the collargol did not drain and the contraction of the pelvis forced the collargol up into the tubules and caused focal necrosis. All of these kidneys were primarily surgical, and their removal would probably have been necessary. Undoubtedly this is a source of danger. Therefore, we should take care not to inject in any case of hydronephrosis in which the injected solution cannot drain afterward and whenever the diagnosis can be made without a pyelogram. In following out a series of experiments on dogs along this line recently, Dr. Mann and I have injected different preparations of colloidal silver into the pelvis and ligated the ureter a short distance below. We found that focal necrosis will result in the parenchyma in practically every case. The various colloidal preparations all act in about the same way. In search for a harmless substance we also employed an emulsion of silver iodid, 5 per cent., and in seven dogs injected with this we found no evidence of focal necrosis. The great objection to silver-iodid emulsion, however, is that it has to be used with a syringe, since it is too viscid to employ by the gravity method. Pyelography is not to be employed with impunity, and should be used only in selected cases. Its use is only excused when the diagnosis cannot be made without it. If we carefully select our cases, and do not use colloidal silver in conditions in which it cannot drain after injection, and if we use the proper technic, there is no reason why an experienced cystoscopist should have serious consequences from pyelography. I believe, however, that we should continue our search for a harmless preparation which could be employed more generally.

DR. A. J. CROWELL, Charlotte, N. C.: I was glad to hear Dr. Braasch say that we ought to search still further for a drug that would be less harmful to the kidney in pyelography. I disagree with Dr. Eisendrath that silver or collargol is not dangerous. I had, about two months ago, the misfortune to lose a patient on whom I used collargol. The patient was referred to me for a roentgenogram and then for ureteral catheterization and collargol injection for diagnosis. When the patient was admitted to the hospital a picture was immediately taken for kidney stone, which proved to be negative. This patient gave kidney symptoms. The ureters were catheterized. The urine coming from the right ureter was perfectly clear and came away intermittently. That from the left was continuous and cloudy, which condition was afterward proved to be caused by pus, and a few tube casts were found, both hyaline and granular. The catheter in the right ureter was removed after it had remained for two or three minutes. About 3 ounces of urine had been withdrawn from the left kidney—in fact, the catheter was left in until the urine came away intermittently. I estimate that at least 1½ ounces of urine was secreted during this time. Therefore, I had no hesitancy in injecting into the pelvis of that kidney 12 c.c. of a 10 per cent. solution. This was injected with a syringe, but very slowly, and on the first indication of discomfort the patient was instructed to notify us, which she did, and the picture was taken immediately. The catheter was left in for ten minutes at least, for two reasons: first, to allow the collargol to return, which it did very readily; secondly, to allow the time for the development of the roentgenogram. The picture was reported all right, the catheter was removed, but the patient suffered such excruciating pain that it became necessary at once to give a hypodermatic of morphin. She was taken care of as best we could by various remedies for the relief of the pain and to overcome shock. She remained a very sick woman until the fifth day when she died. There was almost complete suppression of urine from the very beginning. The greatest quantity of urine secured as ascertained by catheterization in any twenty-four hours was 3 ounces. I was unable to secure a complete post-mortem, but obtained the kidneys. Finding collargol in the opposite kidney of this patient, suggested trying experimental work on dogs to ascertain the distribution of the drug. I injected 10 c.c. into the pelvis of the right kidney of one dog and 5 c.c. into the right kidney of another. I injected 10 c.c. into the kidney pelvis of one and it died in five minutes. The other we killed in two days. We found collargol in the lungs, kidney, liver, spleen and muscles of the heart. I have no specimens of the patient who died, save from her kidneys, but why she should die from suppression of urine when only one kidney was injected is a question. Post-mortem examination showed the capacity of the woman's kidney to be 1½ ounces. I injected only 12 c.c. of the solution, so it was not full. On

the second or third day after the injection she developed symptoms of purpura. Even where she was given hypodermatic injections, there was an extravasation of blood under the skin. She suffered considerable hemorrhage from the mouth and bowels after the second or third day.

Dr. F. R. Hagner, Washington: I saw in consultation a case in which a 25 per cent. argyrol solution had been used. This was done by Dr. G. Brown Miller of Washington, an able gynecologist. He assured me that he put in less than 8 c.c. of argyrol. This woman was about 70 years of age and was supposed to have a tumor of the kidney. Immediately after the injection she complained of discomfort and pain in the precordial region. For twenty-four hours she had practically complete suppression of urine. In the next twenty-four hours she excreted approximately 16 ounces. About the third day she began to pass blood by the bowel, her stomach became very much distended, a stomach-tube was passed and her stomach was found filled with blood. She had hemorrhages from the gums, nose, and blood in the urine and petechial hemorrhages over the entire body. When I saw her I suspected she might have mercuric chlorid poisoning. It looked like a case of metallic poisoning. Has any one seen any symptoms of metallic poisoning in any of these cases in which the colloidal silver salts have been used? We were unable to get a necropsy in this case.

Dr. H. D. Furniss, New York: I had a patient who gave much the same history as the patient reported by Dr. Hagner. She was injected with collargol, and within a few minutes she had an immense amount of pain. Following that the condition cleared up, but on the third day I explored the left kidney and found an anomalous blood-vessel running to the lower pole. Three days after the operation and five days after the injection the patient had suppression of urine, which lasted for eight days, and during that time there was no more than 1 ounce excreted in any one day. At the end of that time I decapsulated the right kidney. I was afraid of getting too much hemorrhage from the side I had previously operated on. Within twenty-four hours after the decapsulation urine began to be excreted, and was excreted in fairly good amount for the next four days, at the end of which time she died; but after the operation this patient had hemorrhages from the nose and mouth, just as Dr. Hagner has reported. Collargol is sometimes used therapeutically intravenously, in a percentage which is a solution. In these cases in which it is injected into the kidney it is in the form of an emulsion, and it has struck me that that probably accounts for the emboli that are found.

Dr. Martin Krotoszyner, San Francisco: I made an observation similar to that of Dr. Hagner in a woman of about 40, who after injection of a small amount of a 20 per cent. cargentos solution developed symptoms similar to those described by Roessle, and which this author considered to be due to an acute silver toxemia or argyria. I cannot share Dr. Eisendrath's optimism regarding the avoidance of all dangers connected with pyelography by regulating the pressure in injecting the silver salt. Shortly before leaving home I injected in a man of 45, with a unilateral pyuria of doubtful character, under very low pressure, 2 or 3 c.c. of a 10 per cent. collargol solution. In spite of the utmost precaution in the procedure and in spite of discontinuing the injection at the first sign of discomfort on the part of the patient, the exposed kidney presented a focus on its capsule which was proved by the pathologist to be due to penetration of collargol through the renal tubules. This observation and similar ones recorded in the literature by others prove that the last word on the cause of pyelographic mishaps is not yet spoken. It is to be hoped, though, that the dangers of pyelography will be avoidable so that this important diagnostic method, which we would not like to dispense with in our armamentarium, will not become entirely discredited.

Dr. Frederick R. Charlton, Indianapolis: I report a death from collargol. This patient had a tumor mass (necropsy was not obtained) perhaps the size of a small grapefruit, supposedly hydronephrotic. This was a year ago, before the danger of using a piston syringe was so fully understood. We injected 15 c.c. of a 25 per cent. collargol solution. Before the injection was completed the patient was complaining of distress. I waited for a moment until he was easier, and then continued the injection until I had injected the full 15 c.c. I labored under the impression at that time that perhaps it would be somewhat difficult to get a dangerous pressure from that amount of fluid, feeling that a certain percentage of it would find its way backward down the course of the ureter along the catheter. That belief does not seem to be borne out by later experiences. We took our roentgenogram, getting an excellent one, showing extravasations of collargol well out toward the cortex and outlining a large mass of some kind. Our patient went into collapse and died in eight hours. This man had walked into the Roentgen-ray laboratory, so that the case was a distressing one, and we could not get a necropsy for obvious reasons. I felt at the time that perhaps it was due more to cardiac collapse than anything else. Granting that I had produced some small rupture in the pelvis, I could not see why that should cause immediate death. I did not feel at the time that collargol was to be regarded as dangerous from the point of view of its drug properties. And so in trying to explain my patient's death I felt that perhaps we had a bad myocardium, that I had produced just enough pain to cause considerable shock, and that his heart had not been able to rally after such shock.

FRACTURES OF THE INFERIOR MAXILLA

A REPORT OF 1,065 CASES TREATED*

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During the last eight years I have had quite an opportunity of studying fractures of the maxillary bones at the New York College of Dentistry. At the college we have a large daily oral surgery clinic under the direction of Prof. Faneuil D. Weisse and myself, which is fed by the outpatient department of nearly all of the large hospitals of Manhattan. Since the founding of the oral surgery clinic at the college in 1906, we have treated over 1,200 fractures of the inferior maxillary bone, but I am sorry to say that at this time I can present figures taken from only 1,065 cases, as some of the records are not very complete.

Stimson says, "By fracture, in the surgical sense, is meant the breaking of a bone or cartilage." The liability of a bone to fracture depends on its shape, size and degree of exposure to external violence or trauma, and also to its exposure to extreme muscular action. On account of its peculiar horseshoe shape, its prominence and its unsupported position, and the fact that it is somewhat weakened by the carrying of teeth that often become diseased, the inferior maxillary bone is the most frequently fractured bone of the face.

Stimson shows that in 14,566 fractures of all the bones of the body treated at the Hudson Street Hospital (1894-1905), 502 of these were fractures of the inferior maxilla. From his figures this bone is the tenth on the list as being most often fractured. Another reason for its frequency to fracture is its weakened condition because of physiologic absorption after teeth are extracted. Most fractures of the body of the bone proper, or of the rami, are complete fractures, and it is the complete fractures that will be discussed to-day.

* Read before the Section on Stomatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

* Because of lack of space this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints.

TABLE 1.—INJURY AND CAUSES IN 1,065 CASES OF FRACTURE OF THE INFERIOR MAXILLA*

Injury and Causes	No.	Per Cent.
Blow of fist	495	46.5
Run over by wagon	38	3.5
Elevator	14	1.5
Gunshot	5	0.5
Pathologic fracture	2	0.2
Extraction of teeth	5	0.5
Edentulous mouths	10	1
Miscellaneous	238	21
Kicks	45	4
Fall	140	13
Baseball bat	13	1.5
Club	32	3
Thrown ball	7	0.6
Railroad accidents	2	0.2
Blackjack	17	1.6
Cranking machines	4	0.2
AGE		
From 1 to 10	68	6½
From 10 to 20	93	8.5
From 20 to 30	298	28
From 30 to 40	340	32
From 40 to 50	184	17
From 50 to 70	82	7.5
SEX		
Male	992	93
Female	73	7

* This and the following table comprise a report of 1,065 cases of fracture of the inferior maxilla treated at the New York College of Dentistry during the years 1906-1913, taken from the service of Faneuil D. Weisse, dean and professor of oral surgery, anatomy and surgical pathology.

The fracture of the alveolar process is very numerous and occurs often on the extraction of a tooth. Complete fractures of the body of the bone are generally vertical in direction, and about 98 per cent. of these fractures are compounded to the mouth, when there are teeth present. This is due to the fact that most of the fractures of the body of the bone occur at the alveolus of a tooth, and runs along the tooth cavity to its end, and then enters the body of the bone in the same direction. The fracture of this bone is the most often compound fracture of any in the body, owing to its thin covering of gum tissue and mucous membrane, and of course, for this reason, it is the most often infected fracture. It is not often compounded to the face. The vertical direction is also due to the fact that the bone is most often fractured by a blow that bends the bone at right angles to its long axis. A blow on one side of the jaw will sometimes cause a fracture on the opposite side in the same way that a blow on a barrel hoop will be felt at a point opposite the point where the blow is received. This is called "fracture by *contre coup*."

In edentulous mouths the fractures are usually simple ones, and are not so apt to be vertical as there is no tooth cavity to weaken the bone, and to direct the line of fracture. These often become compound fractures, as the gum is so thin that pressure of an interdental splint often causes a sharp edge of bone to penetrate the soft tissue.

Fractures of the alveolar process are usually in the anterior part of the jaw, where they are more exposed to trauma.

Fig. 1.—Cap splint or single arch splint used whenever there are one or more sound teeth on either side of the line of fracture.

Varieties of Fractures.—1. Complete. 2. Incomplete. 3. Single. 4. Multiple. 5. Simple. 6. Compound. 7. Comminuted or splintered. Any of the foregoing fractures may be complicated when nerves, blood vessels and other structures are involved.

Symptoms of Fractures.—1. Objective. 2. Subjective.

Objective Symptoms.—1. Deformity. Fractured portions of bone in faulty position, malocclusion of teeth; swelling and edema of soft parts, enlargement of glands.

2. Abnormal mobility of the fractured parts of bone or false point of motion.

3. Crepitus. The grating of the fractured end of one bone on another, obtained in complete fractures by holding one fragment of bone firmly between the fingers and moving the other on it.

4. Increased salivation, or drooling, very marked as a rule, and patient is forced to expectorate continually, owing to reflex excitations of vasomotor nerve.

5. Hemorrhage and ecchymosis, often present when the soft parts have been traumatized. The gums surrounding the point of fracture are often discolored and congested, owing to rupture of small capillaries, and extravasation of blood into the tissues.

6. Inability to close teeth together with much force on account of the lack of muscular control.

7. Teeth often loosened at point of fracture, and the teeth often fractured or chipped.

8. Infection and abscesses and necrosis at line of fracture.

Subjective Symptoms.—1. Pain in moving jaw when eating, swallowing, etc.

2. Pain and "soreness" of throat, due to absorption of toxic material by adenoid tissue of throat.

3. Inability to masticate

TABLE 2.—NUMBER, KINDS AND LOCATIONS OF FRACTURES

	No.	Per Cent.
Number of Fractures:		
Single	951	89
Double	108	10
Triple	5	0.5
Quadruple	1	0.1
Kinds of Fracture:		
Simple	70	6.5
Compound	995	93.5
Location of Fracture:		
Median line	69	6.5
Right Side:		
Lateral region	112	10.5
Cuspid region	96	9
Bicuspid region	122	10.75
First molar region	86	8
Second molar region	123	10.75
Third molar region	66	6
Ramus	26	2.5
Condyle	3	0.6
Coronoid process	2	0.2
Left Side:		
Lateral region	65	6
Cuspid region	87	8
Bicuspid region	108	10.5
First molar region	94	9
Second molar region	144	13.5
Third molar region	70	6.5
Ramus	27	2.5
Condyle	2	0.2
Coronoid process	0	0

4. Pain on pressure at point of fracture.
5. Difficulty in talking and swallowing.
6. Partial and complete anesthesia around point of fracture, due to injury of branches of the third division of the fifth nerve and followed sometimes by slight anesthesia of the tongue.

Causes of Fractures.—1. Predisposing causes. 2. Direct causes.

Under predisposing causes we have:

A. Age. Both extremes of age—the very young child and in the old person. Young children's jaws do not fracture as easily as do those of old people, because the bone is more cartilaginous and springy, owing to the fact that the bones are not completely calcified. Around the ages of 6 to 10 years they are often greatly weakened by the eruption of the second teeth. Spaces are present in the body of the bone to hold these large erupting teeth, and quite often one finds the line of fracture through these cavities. In old persons, of course, all bones are more brittle, more poorly nourished, and the maxilla is often greatly thinned by the absorption that has taken place after the teeth have been lost. The most common age for fracture is between the ages of 30 and 40 years. Men during these ages are more often exposed to trauma, as their activities are greater.

B. Disease is another predisposing cause of fracture. Under this heading we have spontaneous or pathologic fracture:

(*a*) Necrosis of bone caused by infection, osteomyelitis, arsenic poisoning and phosphorus poisoning.

(*b*) Syphilis of bone.

(*c*) Tuberculosis of bone.

(*d*) Cysts of various kinds, including dentigerous cysts, in which large cavities are formed in the bone.

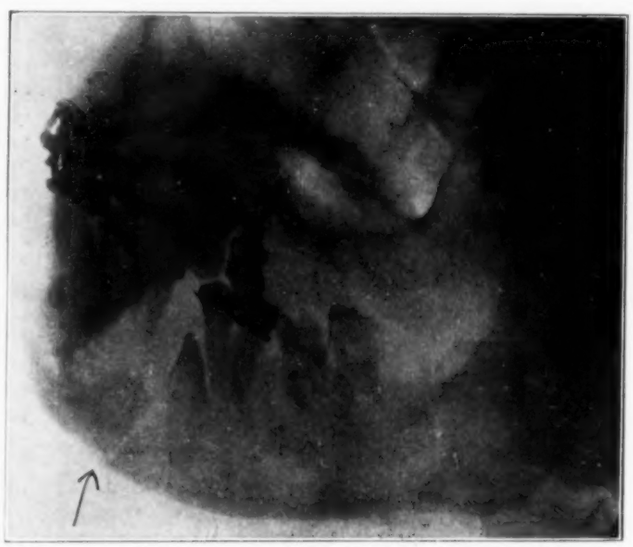

Fig. 2.—Impacted cuspid in line of fracture; a predisposing cause and an obstacle to healthy repair of bone.

(*e*) Osteomalacia.

(*f*) Rickets.

(*g*) Tumors, odontoma, sarcoma, osteosarcoma, etc.

C. Occupation is a predisposing cause. Drivers, longshoremen, chauffeurs, waiters, pugilists, etc.

D. Sex: about ten times as common in man as in woman.

Under direct causes:

A. Blows of fist most frequent.
B. Blows of clubs, etc., next .
C. Automobile accidents.
D. Elevator accidents.
E. Railroad accidents.
F. Gunshot cases.
G. In extracting teeth. A complete fracture of the inferior maxilla is caused very rarely by the extraction of teeth, and I can only count one or two cases in which the jaw has been actually fractured by careless extraction.

Location of Fractures.—I do not agree with Stimson when he says that the most common seat of fracture of the lower jaw is at or near the median line (see tables).

Fractures at the *median line* show, as a rule, very little deformity as the parts are pulled on more evenly by the muscles on either side of the line of fracture. These fractures are not so common as in other regions of the jaw on account of the increased thickness at the symphysis.

The deformity at the *canine region* is not so marked as a rule, as the nearer to the median line the more even is the play of muscles, and the less deformity on this account.

The fracture at the *bicuspid region* often shows quite a marked deformity, the anterior fragment being drawn downward and backward, and the posterior fragment upward and outward.

Fractures between the first and second molar teeth may cause a good deal of deformity; generally the bone anterior to the fracture is depressed by the pull downward of the hyoid group of muscles. The posterior fragment is, as a rule, thrown upward by the contraction of the masseter and pterygoid muscles. The anterior fragment is also apt to be drawn backward, partly by the action of the hyoid muscles.

Fractures of the *ramus* itself do not show very much deformity, as the masseter and pterygoid muscles hold the fractured parts together as a rule. In these fractures the median line of the lower jaw does not coincide with the upper, as the whole lower jaw may be drawn over toward the fractured side if there is any overriding of the fractured parts of the bone. It is caused usually by a blow on the side of the face.

Fractures of the *condyle* are not so rare as the figures would show, but are not often diagnosed even with the aid of the Roentgen ray. A straight blow on the chin, forcing the jaw backward, generally causes this fracture, and quite often causes fracture of the base of the skull, by fracturing through the glenoid cavity, and also fracturing into the external auditory meatus. There is often a marked swelling around the point, and bleeding from the ear. Pain on moving the jaw, and the drawing of the entire jaw over toward side of fracture. These fractures are often very serious, one case being reported by Christopher Heath of London. At necropsy it was found that the glenoid cavity had been fractured and the patient had died from a large brain abscess.

Fracture of the *coronoid process* is extremely rare, as the coronoid process is so nicely protected by the zygomatic arch and its contents. The entire side of the face is often crushed without injuring this part of the inferior maxilla. Some authorities assert that the

coronoid process is fractured by the sudden contraction of the temporal muscle, but this has not been proved conclusively.

Fractures posterior to the *third molar* at the junction of the ramus and the body of the bone are quite numerous, and the fractures in these cases are often in an oblique direction. Displacements in these cases are

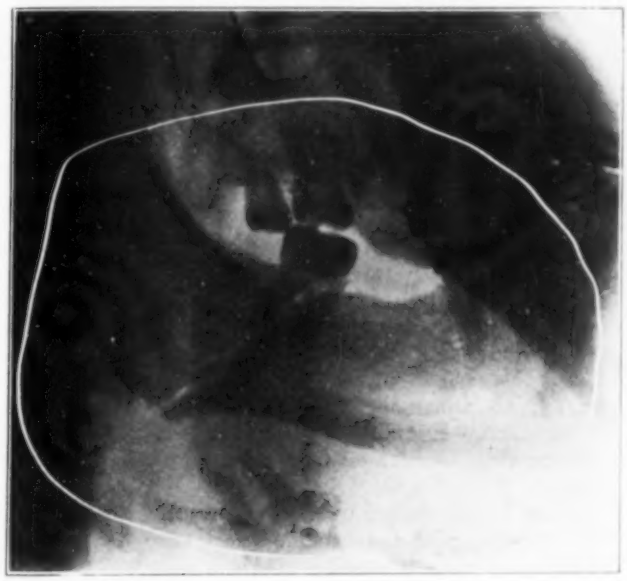

Fig. 3.—Fracture of tooth and jaw; tooth becomes infected and must be removed.

not very marked, as the parts are held together by the masseter and internal pterygoid muscles.

Single and Multiple Fractures.—Single fractures of the jaws are, of course, more common, but double fractures are frequently seen as shown by my tables. Triple fractures are quite rare and I have seen only four or five in the foregoing series. Quadruple fractures are extremely rare, and I have seen only one case. Teeth are often loosened and fractured in complete fractures of the bone. Multiple fractures are generally more painful, owing to the fact that there is usually more trauma, and the fractured ends of bone impinge in more than one place on the inferior dental nerve. In these cases, when trauma has been great there is often an area of anesthesia around or near the line of fracture. This condition often remains long after the jaw has united.

The location and number of fractures of the lower jaw depend a great deal on the articulation of the jaws, and to the arrangement of the occluding teeth. Also to the manner in which the trauma is produced. Slight dislocation of the bone often occurs when the bone has been fractured in more than one place, especially when the fractures are bilateral, as the shape of the bone is not supported and its arch collapses. By the play of the powerful hyoid muscles, the bone is then drawn downward and the condyles are often displaced slightly from the glenoid cavities.

TREATMENT

In treating fractures of the jaws the general hygienic condition of the mouth must be carefully considered and the general physical condition of the patient noted. The teeth should be cleansed first of all—not too minutely removing all calcareous deposits, but the soft food particles and infectious material should be removed from the teeth and soft parts. The gums and teeth should be cleaned every two hours by means of cotton swabs on a stick soaked in hydrogendioxid and water (equal parts). A roentgenogram should now be taken. The next step should be the extraction of any broken-down decayed roots, and any loose teeth near the point of fracture. If these are not removed they often cause abscesses which are generally very troublesome. After the mouth is rendered as clean as possible, lacerations of gums and soft parts have been treated, and roots have been removed, the next important step is to consider the means of proper coaptation and fixation of the bony parts.

If there is very much edema and swelling of the soft tissues, it is sometimes well to apply hot or cold compresses, and wait until the swelling subsides, meanwhile keeping the mouth clean, and the jaws held together with a Barton bandage.

In taking up the matter of fixation of the bony parts, we must consider the mechanics of the case. We must think of what forces are going to act on the different parts of the bone, and how much strength it will require to hold the fractured parts together for a given time.

It is comparatively easy to immobilize a fractured leg or arm, but a different story to keep the inferior maxilla from moving. The inferior maxillary bone is moving continually. The powerful muscles of the jaws are pulling and contracting in different directions all the time. The fractured parts move every time the patient eats, swallows, coughs, talks, sneezes, etc., unless held by a well-constructed mechanical appliance. We must remember that the average splint will remain in the mouth about thirty days under more or less constant strain. These appliances should be strong, comfortable and as small as possible, and should be arranged so that the patient can chew with splint in position if possible. Of course the articulation of the teeth should be carefully studied and the functions of jaw and teeth accurately restored as a final result.

Fig. 4.—Gunshot fracture; cap splint in position.

In discussing the actual method of splinting fractured jaws it will be well to consider again the location of fractures.

In fractures of the *median line*, when there is not much deformity, and when there are one or more sound teeth on either side of fracture, the best method to adopt is the use of a cap splint or single arch splint made of rubber or metal. Wires or interdental splints should never be used in these cases, as they are clumsy and dirty, and the patient is unable to chew with them.

Fig. 5.—Pathologic fracture; no history of any trauma, but long history of chronic abscesses of jaw. Fracture occurred while patient was eating crust of bread.

In fractures at the *molar region*, when there are one or more good teeth, the cap splint can be used, but if the teeth are not strong, wiring the entire lower jaw to the upper is a good procedure for about ten days, until there is partial union, and then the cap splint may be put on. When there is much deformity in this case, wiring the upper and lower jaw together, after applying Angle's bands, is a good plan. Mouths become very foul, and septic poisoning of the entire system may follow and also infection of the respiratory organs when the jaws are wired together for a long period. Carl Beck reports a case of inspiration pneumonia which ended fatally because of the filthy condition of a mouth resulting from the fracture of the inferior maxilla.

Fractures *back of the third molar*, and in the ramus are best treated by interdental splints, and wiring jaws with Angle's wires. The wiring method is the best if there is much deformity, as sometimes it is difficult to force a jaw into an interdental splint and hold it there with a bandage, especially if the deformity is marked.

I disagree with Frederick J. Cotton when he advises the open operation and surgical wiring of fractures in this region. It is in most cases unnecessary. It is of course impossible to hold the ramus by any splint in the mouth, but the anterior fractured end of bone can be held to the ramus by wiring the upper and lower jaws together. In children all fractures are best treated by small modified interdental splints. The teeth are not strong enough to wire and it is difficult and unsatisfactory to cement a cap splint on the teeth.

Surgically wiring through the body of the bone for fractures in any location should not be done. Very poor results are obtained by this method, as most cases terminate in infection and necrosis. We have not had to resort to this treatment in over 1,200 cases.

A method lately used has been the screwing of a Lane plate to the under border of the jaw and good results have been obtained, but this method is unnecessary. Outside splints or apparatus on the face are seldom needed and have not been used at all by us in over 1,000 cases treated at the college.

COMPLICATIONS

Infection is the chief source of annoyance and danger in fracture cases. A large percentage of all compound fractures are infected, and in many of these cases there is necrosis later. Abscesses often form at the point of fracture, and later sinuses form which are apt to break on the face owing to the fact that the pus gravitates downward. Comminuted or splintered fractures are nearly always followed by abscesses and necrosis. Union in these infected cases is generally delayed, and suppurating sinuses may continue for months. A good deal of necrotic bone in these cases is eventually thrown off.

Deep abscesses of the neck are often dangerous, and may extend along the deep fascia into the anterior mediastinum. Edema of the glottis may follow and fatal results occur. Ludwig's angina sometimes results.

Faulty union is quite often encountered, often in children when the bones sometimes unite before one can get on a suitable appliance.

Partial and complete ankylosis often occurs in fracture of the condyles, resulting in loss of function and malocclusion.

Non-union or pseudarthrosis occurs infrequently, generally owing to loss of bone following comminution after infection and necrosis, and perhaps aided by some constitutional disease such as syphilis, tuberculosis, etc.

Fig. 6.—Double fracture which was badly infected; shows marked loss of bone because of exfoliation; poor result obtained.

We have had two cases of failure to unite in the foregoing series of 1,065 cases. This condition is also due to fibrous tissue and torn ends of periosteum coming between the edges of the bone and not allowing them to unite. Dr. Walter C. Cramp[1] in 1911 reported

1. Cramp, Walter C.: Fracture of Inferior Maxilla Complicated by Complete Division of Facial Artery, Med. Rec., New York, Sept. 2, 1911.

a case of rupture of the facial artery due to the fracture of the inferior maxilla. This is a very rare occurrence and I believe the only one on record.

Salivary fistula may sometimes result as a sequence to fracture of the lower jaw, but this condition is extremely uncommon and does not occur unless the soft parts are greatly traumatized.

The diet of patients being treated for fractured jaws and wearing splints is one of a good deal of study and experimentation. It varies a great deal with the individual. My general method is to give the patient as many raw eggs (from four to six) per day and as much milk as possible (from 1 to 2 quarts) and feed every two hours. The diet ought to be carefully worked out for each patient, and the bowels, of course, must be kept open daily by means of efficient laxatives. Patients that have been wired by the Angle method for a month will often lose from 15 to 20 pounds. This, of course, is very weakening and one reason why the Angle wires and bands should not be used if other methods will suffice.

CONCLUSIONS

The inferior maxillary bone on account of its position and shape is the most frequently fractured bone of the face and about tenth on the list of all bones of the body to be fractured. About 98 per cent. of all fractures of the body of the bone are compounded when there are teeth present. And thus it is the most frequent bone to suffer a compound fracture. The fracture of this bone becomes infected on account of the fractures being compound, more than any other bone. The patient suffers great pain from injury to the inferior dental nerve and also from the inability to swallow, eat, drink and cough.

The fracture is about ten times as common in man as in woman. The most common age for the fracture of the bone is between 30 and 40. The most frequent cause of the fracture is a blow of the naked fist. A line of fracture is most often at the region of the bicuspids on the left side. Fractures of the lower jaw depend a great deal on the occlusion of the upper and lower teeth. Fractures of the condyles are rare but are often followed by bony ankylosis. Fractures of the coronoid process are extremely rare and occur only when the zygomatic arch and the side of the face are severely crushed. Great care should be exercised in keeping the mouth clean in the treatment of fractures of the jaw. A cap splint or single arch splint should be used whenever there are one or more strong teeth on either side of the line of fracture to which the splint may be cemented. The interdental splint or intermaxillary splint should be used only in children, in edentulous mouths and in fractures posterior to the third molar when the upper and lower jaws cannot be wired together by means of Angle's wires and bands.

The open operation or surgical wiring of the fractured ends of the bone is unnecesary and generally results in infection and necrosis. The inferior maxillary bone can be more accurately reduced and held in better coaptation than other bones, as direct force can be applied to it by means of appliances attached to the teeth. Non-union very rarely occurs and is generally due to faulty or delayed treatment.

A roentgenogram should always be taken to ascertain the line of fracture, to discover the presence of impacted teeth and to note any infections or abscess conditions at the apicies of the teeth near the point of fracture.

ABSTRACT OF DISCUSSION

DR. G. V. I. BROWN, Milwaukee, Wis.: I wish Dr. Dunning would elaborate a little on a few matters which are sometimes disturbing to people who see fractures only once in a while. That is, the way he meets the conditions of the patient at the time of arrival at the hospital, or at least when called in an emergency. Dr. Dunning spoke casually of the treatment of these cases, but some, I think, require a little more treatment than he described. I find it necessary sometimes to make a temporary splint to give comfort, and I have made it quickly and rapidly out of a modeling compound. It is easily held in position by the use of the Barton bandage and will make the patient comfortable for a sufficient period of time, if necessary, to make it possible to do other work. When a man is thrown from an automobile he usually receives some other injury besides fractures and most of the time those are the things that give us most trouble. So that it is necessary sometimes to take care of cases through a critical period before we can adjust the fractures., I know that in his experience with 1,065 cases Dr. Dunning's observations would be valuable. I would ask him to speak about the manner of adjustment in these cases. I agree with him that, most of the time, a fracture of the condyle will adjust itself, if the rest of the jaw is held, with much less trouble than we can adjust it by wiring. There are conditions, however, due sometimes to the shape of the fracture and degree of the angle of the fracture, that should modify this statement. Because one case adjusts itself nicely without being held and without wiring, it would not necessarily follow that other cases, in almost the same situation perhaps, would do the same, because the angle of the fracture has to do with that. I think we agree that too much is done in fractures of the jaw. The less we do for them after using an appliance which will permit of constant surveillance, as far as possible, and give mobilization, the better. Unfortunately, too much is done in the way of cutting in and wiring the jaw. I do not believe in temporizing at all in the case of a jaw that requires wiring, but I agree with Dr. Dunning that many are wired which should not be. Then again comes in as a part of this question, the manner of adjusting the wires, etc. We should understand the advantage of all methods which have been found most frequently successful.

DR. M. I. SCHAMBERG, New York: Dr. Dunning's statistics are intensely interesting, and I am sure that his experience in these cases, when we read them over carefully in his paper, should help us materially, particularly those of us who see far fewer cases. I have seen a large variety, but in no sense a large number. I have found, as has Dr. Dunning, the Roentgen ray intensely valuable, and in fact almost essential to absolute accuracy in most of these cases, for the reason that so frequently one will see fractures with spiculae of necrosed bone, or infection, or at times portions of the root, and in one instance both spiculae of bone and a piece of the root protruding into the fractured region, which would retard the healing. Another case to which I refer was a pathologic fracture of marked extent in which the Roentgen ray showed what looked like a compound comminuted fracture of a jaw that was ordinarily thick. I was inclined to suspect that this was produced primarily by arsenic necrosis, and this necrosed bone in the jaw was separated in many places. We dealt with this case in a manner that would not appear to you to be surgically correct, but by which the case culminated satisfactorily. All that appeared to be bone was nothing but a thin matrix and this acted as a matrix for new bone to form. The jaw was splinted on each side, and this patient wore the splint at an old age, resulting in the reduction of the fracture and the formation of a very useful jaw. The splint was removed after the patient wore it for six months and the result on that side is wonderful. I have a similar case in which there was extensive necrosis of the jaw and in which, after a similar appliance was worn, complete regeneration of the bone took place. I believe that much can be done by the application of what may be termed surgical prosthesis without real surgery, to bring about results that heretofore have not been achieved.

DR. THEODORE BLUM, New York: This appliance which Dr. Schamberg has spoken of is really not a splint in the ordinary sense of the word, but is the splinting of the jaws by means of a sliding joint. One point with regard to fractures is the splinting of the lower jaw to maintain its mobility, and the same principle is carried out in these pathologic fractures in a different way. At the University of Pennsylvania we were taught by Dr. White that there were three points to be remembered in the treatment of fractures. First, reduce the fracture; secondly, maintain mobilization of the joint on either side of the fracture, and thirdly, maintain nutrition.

DR. W. WAYNE BABCOCK, Philadelphia: Anyone who has gone to the trouble that Dr. Dunning has in collecting the data on such a large series of cases as this, nearly eleven hundred, every one of a single bone, is deserving of great credit, because it clarifies our knowledge with regard to certain points which have been in dispute, and confirms things which may have previously needed confirming. We are practically agreed as to the plan of treatment; as to the advantage of getting away from some of the older appliances, especially the interdental splint, and relying on operative intervention. Nature has already done about the worst she could do in the accident, and then it has been the tendency for the surgeon to step in and further traumatize the parts, and it is not surprising that necrosis and various ill results have followed. Then again, in these cases sometimes the question arises as to the external wound. In most cases we are safe in cleansing and closing any external wound on the face. If the fracture is compound, let it be compound in the mouth and not from the face; and if one has been careful, as a rule, I believe the face would heal and drainage will take place in the mouth and to the same degree. Then as regards teeth that are somewhat loosened adjacent to the fracture, as a rule, I believe, Dr. Dunning feels that these may be left at the time to see what the results will be. Frequently teeth which look as though they must be sacrificed, if followed up, gradually become fixed; and of course, later on, spiculae of bone or any tooth that has become loosened may be removed at a time when the deformity may not be so great, or at a time when the removal may not bring about a greater deformity.

DR. HENRY S. DUNNING, New York: I agree with Dr. Brown that a great many of these patients need attention other than that pertaining to the jaws. For instance, in one case, a woman was hit by a taxicab and among her injuries was the fracture of the jaw. This patient was unconscious when picked up and was suffering from a fractured rib and arm and concussion of the brain. This brings out a point in the paper that many fractures of the condyle are accompanied by fracture at the base of the skull, or fracture of the posterior wall of the glenoid cavity. I think Dr. Beck reports a case in which the patient died from abscess of the brain, due to a blow on the chin causing fracture of the base of the skull. I treat a great many of these cases in the hospital when the patient has received other injuries and has sometimes brain symptoms. I think the reason why the "knock-out blow" on the point of the chin is so famous is because the shock is so severe in a region that is close to the brain. The condyles are forced into the glenoid fossa, and being wedge-shaped, often cause a fracture into the cranium. With regard to surgical wiring, I have seen only one or two cases in over twelve hundred in which wiring had to be resorted to. Will Dr. Schamberg, who has had so much experience in the use of the Roentgen ray, say what angle is best from which to obtain a good roentgenogram of the condyle? In one case nineteen roentgenograms were taken of the fracture, and the one shown was the best we could get and the patient was put in every conceivable position to get that. In most of the other roentgenograms we had the vertebrae overlapping the condyle.

How does Dr. Blum keep the two ends of the bone in apposition and allow the patient movement of the jaw at the same time, in fractures posterior to the third molar? I believe that it is poor treatment to wire the upper and lower jaws together when any other appliance can be used that will permit the patient to use the jaw while being treated. I never do it unless the fracture is posterior to the third molar, or for some reason the teeth in the mouth cannot hold a splint to advantage. It is difficult often to keep the mouth clean when wired. Dr. Beck reports a case of inspiration pneumonia from a filthy mouth, wired for some weeks after a fracture, in which the mouth could not be kept clean, and in this case the patient died. I agree with Dr. Babcock that if we can possibly close the external wound, we should do so. Of course these wounds are mostly dirty or infected wounds and must often be drained. I think it is best to close these wounds partially, as soon as possible, but to leave one end open for a few days and allow it to drain and then later to fill in with granulations.

A PORTABLE POSITIVE-PRESSURE APPARATUS FOR ADMINISTRATION OF ETHER BY INTRATRACHEAL INSUFFLATION

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On account of the advances in head, neck and chest surgery, made possible by the use of the Meltzer-Auer method of administration of ether by intratracheal insufflation, I decided, at the suggestion of Dr. William M. Sweet of the Department of Experimental Surgery, University of Pennsylvania, to construct an apparatus suited to the needs of service conditions. In order to meet these conditions, it was necessary that the apparatus should "work" at all times, should be made easily transportable, and non-destructible by age from storage or climatic conditions. As a few parts of this apparatus had to be made of glass, as far as possible standard articles only were used.

Through the courtesy of Dr. Sweet, Dr. Charles H. Frazier and Dr. George Müller of the University of Pennsylvania, this apparatus was tested on both animals and patients at the University Hospital, and was exhibited in 1912, at the annual meeting of the American Medical Association, at Atlantic City, and the Military Surgeons' Association at Baltimore.

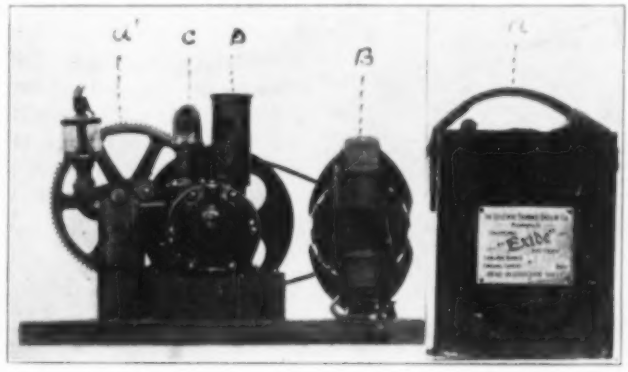
Recently I have had the opportunity of giving it a thorough test under field-service conditions in the surgical work at Field Hospital 3, Texas City, Texas, and since May 30, 1914, at Vera Cruz, Mexico. During this time the apparatus was essential to the successful performance of four surgical operations: (1) A plastic operation on the chest-wall for tuberculous necrosis of ribs, with tuberculosis of pleura and lungs; (2) dissection of bronchial fistula of neck; (3) resection of frontal bone for frontal sinusitis; (4) tuberculous abscess of neck. In the two latter operations the anesthetic was administered with this apparatus, using pharyngeal instead of intratracheal insufflation. The anesthetic was administered by Capt. H. C. Michie, Jr., Medical Corps, U. S. Army. That Captain Michie refers to it as "the lazy man's way of giving an anesthetic" is an evidence of the ease with which he was able to administer it with this apparatus.

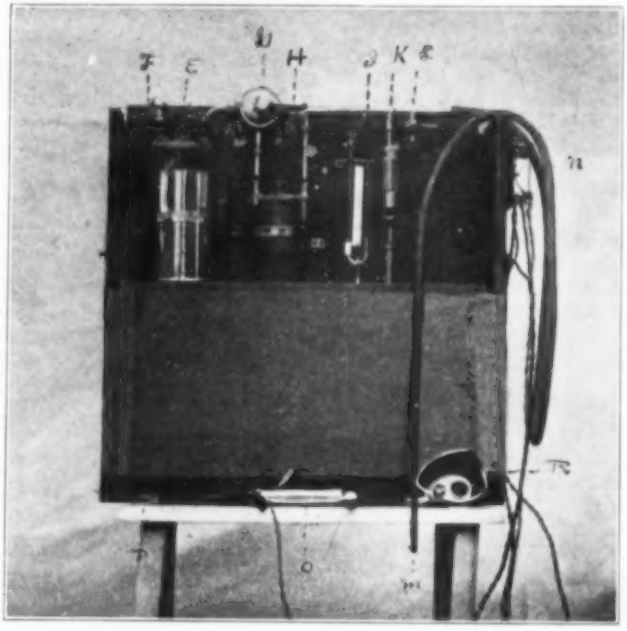
At Philadelphia, while testing this machine, a curious incident happened at the University Hospital. A physician with some experience in the use of the Meltzer-Auer method of producing positive pressure in the lungs by intratracheal insufflation anesthesia, expressed some doubt as to the mechanism of distending the lungs against the chest-wall by means of intro-

ducing air under pressure through a catheter which was only half the diameter of a man's trachea, asserting that an increase in incoming air would cause a corresponding increase in outgoing air between the catheter and the trachea, to the extent of preventing increased intrapulmonary pressure. To convince him and clear the question beyond possibility of any doubt, an animal was anesthetized by this method and both sides of the chest-wall were opened freely; with this apparatus, by increasing the pressure to 20 mm. as registered on the manometer, both lungs came well up and filled both openings. By further increasing the intrapulmonary pressure I was able to distend the lungs well out of the chest cavity.

With this apparatus operations can be done on the chest-wall without the hazard of a fatality from pneumothorax. The lungs may be operated on, provided hemorrhage is controlled by ligature or cautery, under practically the same degree of risk as in operating on the abdominal viscera. As remarked by Keen, "greater advances have been made in lung surgery in the last ten or twelve years, through the agency of the Meltzer-Auer method of maintaining positive-pressure and negative-pressure cabinets, than in all previous years in the history of surgery." The Meltzer-Auer method of maintaining positive pressure in the lungs has very largely superseded the use of negative-pressure cabinets on account of being simpler in its use, more satisfactory in its results, and far less expensive in cost of apparatus.

While stationed in Philadelphia in 1912, I had the opportunity of observing in Dr. Charles H. Frazier's clinic, at the University Hospital, the administration of this form of anesthesia in some forty odd cases, the apparatus used in Dr. Frazier's clinic being one devised by Dr. George P. Müller, Dr. Frazier's assistant. On one occasion when I gave the anesthetic for Dr. Frazier the patient was a man 55 years old who had a partial excision of the tongue done for carcinoma, with extensive dissection of the glands of the neck. He had been a heavy drinker, and his arteries were markedly sclerosed. At the end of an hour's anesthesia, Dr. Frazier remarked that his pulse was as good as it was at the commencement of the anesthetic.





Portable positive-pressure apparatus for ether administration; motor, blower and hand mechanism which fit in lower compartment, are one-third larger for illustrative purposes than apparatus in case. The entire apparatus contained in a box, weighs about fifty pounds and is the size of a suit-case.

Reference has been made by a few persons to the greater liability of ether-pneumonia from intratracheal insufflation. This has not been proved in over a thousand collected cases. I am inclined to believe that ether-pneumonia would be less by this method for the following reasons: 1. The catheter is sterile and is passed through a sterile Jackson bronchoscope introducer, no foreign material being introduced with catheter. 2. The return current of air bars the introduction of foreign matter after the anesthetic is commenced. 3. No chilling of tracheal or bronchial mucosa results from introduction of the etherized air, as after passing through the 3 feet of rubber tubing connecting the apparatus with the catheter, the air introduced has returned to room temperature.

It has been observed at Peck's clinic at Roosevelt Hospital, and my observations at Frazier's clinic at the University Hospital, Philadelphia, were, that nausea and vomiting were far less common after intratracheal insufflation anesthesia than after administration of ether in the usual way with a mask. This is accounted for by the fact that on discontinuing the anesthesia by intratracheal insufflation, it is the custom to blow out the lungs with fresh air, thus preventing the patient from swallowing ether-laden mucus when coming out from the anesthetic.

This apparatus while primarily designed for maintaining positive pressure in the lungs in conjunction with anesthesia, is of almost equal value in head, neck and spinal surgery, in that it removes the anesthetist from the field of operation, and can be administered with facility in any position of head and body.

Also, in the hands of a medical man, its service is equal to that of a pulmotor, air or oxygen being substituted for the etherized air. A valve or blow-off readily controlled by the operator admits of artificially distending and collapsing the lungs eighteen to twenty times to the minute. It has the advantage over the Sylvester and other forms of manual artificial respiration in that the machine does the work without wearying the operator. Thoroughness in the application of artificial respiration would not be sacrificed because the operator was exhausted.

The claims made for this apparatus is that it will work at all times. For convenience it is usually operated by an Exide storage battery; if for any reason the storage battery fails, by a readily adjusted gearing it is easily operated by

hand mechanism. This hand mechanism is operated by grasping the handle located to the front and on the outside of the case in which the apparatus is contained, and by a slow and comparatively noiseless turning of crank connecting the gearing, the requisite pressure is obtained with little or no effort.

This I consider one of the most valuable improvements on this apparatus over that of other apparatus as suited to the needs of service conditions. The hand mechanism being substantially made of cast iron, no deterioration would result with storage or continued use in tropical climates. This cannot be said of the foot-bellows, which is made of leather and prior to this has been used as the substitute power for this kind of an apparatus. The apparatus is made by the Pierce Instrument Company, Philadelphia, and is described as follows:

"Power is derived from an Exide storage battery, *A*, is transmitted to *B*, an Edison motor (or power may be derived from hand mechanism *A'*. Air enters *C*, a positive pressure (hypress) blower, passes through *D*, an oil separator, by tubing to *E*, a standard three-necked Woulfe bottle, where air is filtered and moistened by gauze. This bottle sits in a copper tank and can be heated by hot water (this has, however, not been found necessary). A stop-cock is located at *F*, to allow escape of air not required for pressure.

"The air after being filtered passes out of distal neck of Woulfe bottle through a simple valve, *G*, where as much of the air current as is desired is made to pass over the ether in container, *H*. The amount of air passing over ether is indicated on index just over valve, *G*, which is easily regulated by hand. A mercurial manometer, *I*, indicates pressure of etherized air in lungs, and a mercurial blow-off, *K*, prevents excessive intrapulmonary pressure. To allow the lungs to partially deflate, the stop-cock, *L*, is opened and closed four or five times a minute. The etherized air passes out through 3 or 4 feet of rubber tubing to the tracheal tube, *M*.

"The Jackson laryngoscope, *O*, containing a small incandescent light is lighted by storage battery regulated by rheostat, *N*; *P* is a specially designed clamp for holding tracheal tube in position; *R* is an ether mask for use in etherizing patient before introducing the tracheal tube.

"The tracheal tube is introduced after the patient has been thoroughly anesthetized by the mask method. A No. 24 F. tracheal tube is the size of the catheter used. The tube is passed down the trachea a distance of from 26 to 30 cm. until the end of the tube comes into contact with bronchial tubes and their bifurcation, it is then withdrawn 1 or 2 cm., and the anesthesia by intratracheal insufflation is commenced."

The safety of this method of anesthesia is attested to by Dr. Samuel Robinson in a paper before the Massachusetts Medical Society, in which he makes an analysis of fourteen hundred cases of anesthesia by intratracheal insufflation with the statement that "intratracheal insufflation anesthesia is as safe a method of ether anesthesia as we have at our disposal regardless of the seat of operation."

Legal Record of Births.—The registration of a child's birth forms a legal record that is frequently useful and may be of the greatest importance. It establishes the date of birth and the child's parentage and legitimacy. It may be required to establish the child's age for attendance at public schools, for permission to work in states where children below a certain age are not allowed by law to be employed; to show whether a girl has reached the age of consent, whether individuals have attained the age when they may marry without the parent's permission; to establish age in connection with the granting of pensions, military and jury duty and voting. It may be necessary in connection with the bequeathing and inheritance of property or to furnish acceptable evidence of genealogy, and, in fact, may be important and useful in possible events too numerous to mention.—John W. Trask, Supplement No. 12, Public Health Reports, April 3, 1914

RESECTION OF THE KNEE-JOINT FOR TUBERCULOSIS *

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Resection of the knee-joint is an old operation dating back to Filkin[1] of Northwick, who performed a successful resection in 1762. He was followed by Park[2] of Liverpool, in 1782; by Moreau[2] in France, in 1792, and Mulder[2] in Holland, in 1809. Buck's[3] operation in 1844 is given credit of being the first in America. In pre-Listerian days the operation was not in favor on account of the frightfully high operative mortality. The statistics of Heineke[4] (1866) reporting eleven cases with four successes and seven deaths emphasize this fact. Ollier's[5] statistics up to 1870 show a corresponding mortality, he having performed seventeen operations with but one recovery. After the introduction of antisepsis, Ollier's mortality dropped to 10 per cent. To-day, in properly selected cases, the operative mortality may be considered practically nil.

Fig. 1.—Bony ankylosis; result of acute infection. Note the tendency of the medullary cavity of the femur to become continuous with the medullary cavity of the tibia.

As a functionating knee rarely follows the treatment of tuberculosis of the knee in an adult, ankylosis with cessation of symptoms often is the best result to be hoped for. In an adult, however, tuberculosis *per se* rarely brings about an ankylosis. It may more readily occur after the formation of abscesses and discharging sinuses following secondary infection.

The history of cases in our clinic presenting a bony ankylosis of the joint (Fig. 1) is very different from those cases of the tuberculous type to be considered in this paper. The onset is sudden, coming on frequently as a result of exposure to the cold. Gonorrhea

* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Filkin: Jour. de méd., lxxxiv, 400; cited by Senn: Tuberculosis of Bones and Joints, 1892, p. 455.
2. Tabulation by Price: A Description of the Diseased Conditions of the Knee-Joint, etc., London, 1865, p. 58.
3. Buck: Tuberculosis of Bones and Joints, Senn, 1892, p. 456.
4. Heineke: Beitrage zur Kenntniss und Behandlung der Krankheiten des Knies, Danzig, 1866, p. 240.
5. Ollier: Sur la résection du genou, Bull. de l'Acad. de méd. de Paris, 1889, No. 20.

may be a cause. Tonsillitis or sore throat is often a premonitory symptom; chills and fever ensue, and the joint or joints become involved, causing swelling and pain so excruciating that opiates only partially control it. The patient is usually allowed to assume any posture that gives him greatest comfort. Symptoms usually subside in from six to twelve weeks. Ankylosis is apt to occur in the position in which the joint was held during the acute stage of the disease. The soreness gradually passes away, the general health returns to normal, but the patient is crippled by the mechanical inconvenience of the limb involved. This is the type of case which promises the best results in arthroplastic work.

The type of tuberculous cases under discussion gives no such history and presents no bony ankylosis (Fig. 2). The onset is slight and trauma may or may not be a definite factor. Accurate statistics are difficult to obtain on this point. The history records remissions, but never entire freedom from some inconvenience. After years of gradually increasing difficulties, many patients request amputation. We have yet to see any joints of this type attain bony ankylosis by treatment under casts and braces, unless secondary infection has been a complication.

Undoubtedly, in some cases, tuberculosis of the knee-joint is cured by conservative treatment in the early stages. Definite information would be collected if aspiration were done in early cases and the guinea-pig test made. This test has proved to be a great aid in cystoscopic work and should be of the same value in the diagnosis of obscure lesions of the joints.

Fig. 2.—Tuberculosis of the knee of six years' duration in an adult. Destruction and disintegration of all constituents of the joint. No evidence of bony ankylosis.

The question arises, What shall be done with these cases? Conservative measures should be tried for a reasonable length of time, though in our experience with cases of tuberculosis of the knee-joint in adults resection is usually the final solution.

The selection of cases, or rather, their preparation for operation is important. The results are almost always good if the patient is operated on in the quiescent stage. Pain is much less and swelling and edema of tissues followed by sinuses is not so frequently a postoperative complication if this rule is adhered to. Extension and rest in bed are probably the best means of quieting the condition.

Generally speaking, since the results are less favorable in patients past 50 than in those between 20 and 40, it is even more important that the former be operated on during the quiescent condition. A disastrous result leading to amputation is very likely to prejudice the surgeon against a procedure which, if done under the proper conditions, gives excellent results.

Fig. 3.—Radiograph of specimen. Ankylosed knee-joint three years after resection. Amputation because of pain and formation of abscesses.

This paper is based on a series of thirty-seven patients who were operated on before March, 1913, and whose histories have been subsequently traced. The records of the Mayo Clinic show sixty-six resections of the knee-joint before that date, but only thirty-seven could be traced. Up to May, 1914, seventy-eight resections had been done for tuberculosis of the knee with no operative mortality. Only cases have been selected which, by a review of the history, operative findings and pathologic report, were undoubtedly tuberculous. In some, the diagnosis before operation had been cleared up by the guinea-pig test. An attempt has been made to classify the symptoms, but such detailed report would be out of place here. The average age of patients in the sixty-six cases was 27 years; forty-three of these were males, twenty-three females. The average duration of symptoms before operation was eight years. These patients all came for consultation on account of varying degrees of pain, disability and deformity. Thirty-seven patients were traced, and of these thirty-two may be classed as cured since the functional results were good; two returned for amputation and three died. Of the three who died, full information could not be obtained. In one the cause of death (four and one-half years after operation) was given as tuberculosis, but without stating the site of the lesion. Two died of tuberculosis of the lungs; one, one and one-half years, and the other, three years after operation. Very encouraging and grateful letters were received from

the patients who were cured, many of whom had gained from 40 to 60 pounds. Practically all were able to resume their full duties. Two stated that there was still some motion in the knee which caused inconvenience and feeling of insecurity, but that they were free from pain. Rather than resect again, two pieces of bone will be grafted to induce ankylosis and relieve these patients. Two patients of the thirty-seven have persisting sinuses. In one case the sinuses persisted even though there was firm bony ankylosis. This patient also had pulmonary tuberculosis. The abscesses which formed in the region of the knee, causing pain and loss of sleep, were opened and drained as they appeared. Vaccines, tuberculin, etc., were used to no avail. Three years after the resection, amputation was performed and the patient now gets about on an artificial limb; tubercle bacilli have disappeared from his sputum and the roentgenogram of the lungs shows marked fibrosis. A dissection of the removed joint shows firm bony ankylosis (Fig. 3). Each sinus led down to a superficial bony erosion, resembling the so-called tuberculous periostitis. Such sinuses may occur in patients operated on in an acute stage of the condition.

The time spent by the patient in absolute rest prior to operation is well repaid by the easy and shortened postoperative convalescence. In the acute stages with threatened rupture of abscesses, it is better to insist on rest and aspiration of the abscess, which, in a certain percentage of cases, will avert further formation of abscesses and sinuses. Three patients with sinuses were operated on: One of these, operated on in the acute stage in our clinic, had an amputation elsewhere three months later and died of cause unknown. In the two other patients operated on the sinuses healed within four months.

Fig. 4.—Bony ankylosis one year after resection.

The social status of the patient influences to a great extent the treatment. Obviously, a person of sedentary occupation can more readily put up with inconvenience of a brace or case than one engaged in active pursuits. The latter will be better off with a stiff knee which allows him to get about without pain than with braces and crutches.

The specimens were examined from a pathologic point of view to see if any definite data could be collected as to whether the primary focus was in the bone or the synovial membrane. This was impossible to determine owing to the advanced stage of the disease and the amount of bone destruction. All evidence of the early condition was destroyed, the picture showing only the terminal stage. Ely[6] has stated that the focus is more often primary in the synovial membrane. Stiles[7] has stated that in probably one-half of his cases in children the disease was primary in the synovial membrane. Certainly in our experience it would seem that the majority of cases are primary in the synovial membrane; but this opinion is based principally on clinical and radiographic studies.

All of the cases in this series were unilateral. Some patients had tuberculosis of the lungs when operated on. Definite figures are not possible, for, while many cases were classified as suspicious, only six were proved to be phthisis. One patient whose case was considered suspicious died, and two other deaths occurred three or four years later in patients whose lungs were clearly tuberculous at the time of operation. All were benefited by the operation. Two patients operated on are not in good health owing to kidney-lesions, but the condition of their knees is one of bony ankylosis, and the cases are classified among the successful cases. One patient with undoubted tuberculosis of the lungs has gained 35 pounds and reports himself in the best of health. We do not hesitate to do a resection of a tuberculous knee when it is one of two or three foci and seems to be the chief cause of the patient's poor general condition. Ordinarily, the patient's finances prevent indefinite treatment by rest and special apparatus. Our object must be to enable these people to get about without pain.

The types of operations suggested for tuberculosis of the knee-joint vary all the way from an erosion to a complete excision. In this study resection only is considered.

Ely in the last few years has made a point that the disease in the joint is there because the soil is favorable to the growth of the tubercle bacilli and that all that is necessary is to change the soil to starve out the bacilli. Therefore, he advises removal of only enough of the joint-surface to produce an ankylosis, doing this by aid of a chisel without disturbing the crucial ligaments or spreading wide the joint. The soft tissue may be ignored. The ankylosis changes the spongy bone to hard bone.

The Fergusson[8] type of operation is used in the Mayo Clinic and is essentially as follows: A tourniquet is applied 6 inches above the knee; an incision is made two-thirds the circumference of the knee following the line of the joint and running just below the patella, severing the lateral ligaments and the ligamentum patella, allowing quick exposure. The leg and foot are wrapped with sterile towels so that the knee may be acutely flexed on the thigh. The soft tissues are dissected back three-fourths of an inch from the head of the tibia and the femur. If the patella is fixed or seems involved, it is removed. An amputation saw with a blade from 3 inches to 4 inches wide is used to saw off the top of the tibia and femur, usually removing about ½ inch of the tibia and from ½ to ¾ inch of the femur. By a little care the saw

6. Ely: Joint Tuberculosis, 1911, pp. 145, 154.
7. Stiles: Brit. Med. Jour., Nov. 16, 1912, ii, p. 1356.
8. Fergusson: Tuberculosis of Bones and Joints, Senn, 1892, p. 456.

may be introduced at such an angle as to insure the accurate fitting of the ends of the bone at the angle desired. If the patient's business requires much standing, about 10 degrees flexion is desirable, but for those who remain seated much of the time from 15 to 20 degrees flexion is a better position. The denuded surfaces are swabbed with iodin, the soft tissues sutured together with chromicized catgut and a rubber drain inserted. Such soft tissue is removed as may be superfluous in closing the wound. An extensive dissection for removal of all the soft tissue showing involvement is not necessary or desirable. Through a separate incision in the skin a wire nail is driven up through the head of the tibia into the femur. The nailhead is left projecting out through the skin, whence it is very easily removed in two or three weeks. It serves its main purpose while the dressing is being applied and in this differs from the use of metal plates as advocated recently by Osgood.[9] The tourniquet is removed and the skin is sutured with silkworm and horsehair, and the leg is then put up in a plaster-of-Paris case including the ankle and foot. At the same time a window is cut over the wound; within forty-eight hours the dressing is changed and the drain removed. Naturally there is some pain, which usually ceases within forty-eight hours, and, once fibrous union has started, the convalescence is free from pain. The case, together with the suture and nail, is removed in about two weeks and a new case applied which remains from six weeks to three or four months. When the ankylosis seems firm enough, a stiff-legged brace is used by day and a light posterior splint at night. Some of our patients have had sufficiently firm union to bear their weight in four months, but usually it takes about a year (Fig. 4).

A review of our work has led us to advise the operation in all cases of proved tuberculosis of the knee even if but slight destruction of bone has been revealed by the Roentgen ray. On opening up a joint in which the radiogram has shown but slight destruction of bone, one is often surprised to find complete destruction of the articular surfaces. In none of our cases of this type has there been bony ankylosis demonstrable on exposure of the joint at operation.

ABSTRACT OF DISCUSSION

DR. EDGAR D. OPPENHEIMER, New York: When there is marked flexion deformity and this is straightened, we may expect gangrene of the blood-vessels; but we had one case in which no such condition was present. The leg was practically straight before operation; and the day following, occlusion of the veins took place. I have seen no other case reported in which this occurred, when no straightening of the leg was done. I dissected the leg afterward and found the arteries patent; but the veins were occluded above the site of operation. There seemed to have been no accident, and I believe it was due to disease and inflammation about the vessels in the popliteal space. I would suggest that we make a longitudinal incision, instead of a cross incision; because the latter cuts off so many collateral veins.

DR. W. C. CAMPBELL, Memphis, Tenn.: I was a little surprised to hear Dr. Henderson state that he removed as much as three-quarters of an inch, I believe, from each surface. That seems a considerable amount and more than I have been in the habit of removing. I take off as little as possible. I just remove the cartilage and expose the bone, so that the surfaces will fit snugly. I have had no displacement, and have not had to use a nail or a plate in my work. The cast is applied with very little padding, and has been sufficient to give proper immobilization so that ankylosis was the result.

DR. JOHN RIDLON, Chicago: Did I understand Dr. Henderson to say that he and his associates in the Mayo clinic advise excision of all tuberculous knee-joints in adults and children? It seems to me that we should not go on record with such a recommendation. Men who treat tuberculous knee-joints by conservative methods, know that many knees are saved with perfectly good joints; whereas, excision or amputation would be done by many general surgeons. I have had the satisfaction of saving the knee in a case in which a good surgeon had excised one knee and wished to excise the other. The patient objected. The other knee, which was not excised is now straight in extension, has normal flexion, and has been for ten years a sound and healthy knee. At the meeting of the American Orthopedic Association in Philadelphia, Dr. Ryerson said that he wanted to see such a case. When he gets back to Chicago, I will send this woman to see him. It is by no means necessary, in my opinion, no matter how great the destruction, to excise the knee in order to cure the disease. As a time-saving measure in adults, it may be desirable; but for this reason, in children it is not. I saw a case in which an eminent orthopedist had made excision in childhood, and in adult life; there were 9 inches of shortening. I do not wish this Section to go on record as favoring excision in all cases of tuberculous knees.

DR. R. A. HIBBS, New York: Is it not probable that the good accomplished by the resection of the knee for tuberculosis, is due to the elimination of motion produced by this operation, rather than to the removal of the tuberculous infection? The relief of symptoms occurs, as a rule, only in those cases in which motion is eliminated by a fusion taking place between the femur and the tibia. When this fusion does not take place, the activity of the disease usually continues. If such is the case, since it is impossible to remove all the infected material, it would seem to be wiser to make no attempt to remove it at all, confining the operative procedure to one which will best insure the desired fusion. As a means to this end, therefore, it has been my custom simply to remove the cartilage of the two bones and implant the denuded patella between them.

DR. FRED. J. GAENSLEN, Milwaukee, Wis.: I am glad that Dr. Hibbs brought up the question of the purpose of the operation. He, I think, agrees entirely with Dr. Ely that in all operations for the treatment of tuberculous conditions of joints, the elimination of motion is the essential thing. In all text-books on surgery, we read of the necessity of eradicating every possible trace of tuberculosis in a joint, when the operation is indicated at all. I have not had much experience in resections of tuberculous joints, and they are rarely called for with the efficient present-day conservative methods, but I have resected some knees and shoulders, and I was sure, at the end of these operations, that there was some tuberculous tissue that I had not touched, especially in the case of a shoulder, where it is hard to get at the synovial membrane around the glenoid cavity and to remove the granulation tissue in the cavity. Therefore I would say that the eradication of all tuberculous tissue in a tuberculous joint is next to impossible; and I have never seen any one else do a complete operation on any joint. In adults, tuberculosis of joints is often associated with pulmonary infection, in which case general anesthesia may be undesirable. In a recent case of knee-joint tuberculosis with pulmonary lesion, resection was done, using Bier's method of local anesthesia. The limb was first rendered bloodless by means of a rubber compression bandage from the toes to midthigh. The saphenous vein was exposed in the lower third of the thigh between two Esmarch bandages and 100 c.c. of 0.5 per cent. novocain solution were injected into the vein. Complete anesthesia resulted very promptly, so that the resection was absolutely painless. Just prior to closing, the Esmarch bandage was removed and as the last skin sutures were taken sensation was just returning. The method appears to deserve wider application.

9. Osgood: Boston Med. and Surg. Jour., July 24, 1913, p. 109.

DR. FRED H. ALBEE, New York: The attempt to remove all tuberculous bone at the knee-joint is inadvisable, because it jeopardizes our chances for bony union. We should remove as little bone as possible, and thus get the largest possible surfaces of the tibia and femur together. I believe that the whole object should be to get bony union. I have never seen a knee-joint in which bony union had occurred, in which any tuberculous tissue remained for any length of time. The question is: Can we, in any way, aid in hastening this bony union? Dr. Hibbs has already mentioned his method of putting in the patella. I believe that every effort should be made to hasten bony union. I have carried out the following procedure in a few cases in which the patella was a little involved. I took off a small portion of the posterior part of the patella, and split the remaining portion into two strips. I then inlaid these inserts into each side of the tibia and femur, putting half in each bone. In the three cases in which I have done this, the bones united rapidly. In another case, I used a graft from the tibia with the same technic. Dr. Osgood, a year ago, in a case of excision, came to the conclusion that a Lane plate was advisable in order to get more rapid bony union; and I understand that the orthopedic surgeon at the Massachusetts General Hospital has been using the Lane plate since. I believe it is a good thing to put in bone instead of a Lane plate; and that the inlay is preferable in hastening ankylosis. Within a month I have seen a case of tuberculosis which had all subsided. I had done a circular cutting, taking off only cartilage from the tibia and femur and getting the broadest contact of bone. Nevertheless, the patient had two or three degrees of motion, and an unstable and sensitive joint. If I had put in inlays, I think he would have got union. In another case in which I did a resection a few years ago, the patient was later taken to another hospital and on account of delayed union amputation was done there. I believe there would have been a good chance for union in this case if time had been given for it; but there are a large number of cases of delayed union in which a secondary resection has to be done.

DR. JOHN DUNLOP, Washington, D. C.: How soon after the diagnosis is made is this operation advisable?

DR. H. W. ORR, Lincoln, Neb.: When a nail is not used, or, perhaps, when a nail is used, would it not be better to have the plaster put on up to the trunk, so as to get real immobilization?

DR. EMIL S. GEIST, Minneapolis: One point that has not been brought out concerns the question of late deformity after this operation. Many of us have seen resected knees in which a good deal of deformity has taken place, usually in the direction of flexion. I have seen one case in which, following resection, there was a right-angle deformity, a genu recurvatum. The Germans believe that there is a tendency to deformity for a long time after such a knee has been resected even if bony ankylosis supervened shortly after resection, and I think that a mistake was made by many of us in not holding the knee in proper position long enough, either by means of braces or with plaster appliances. This is an important point.

DR. SAMUEL F. JONES, Denver: Three distinct points should be strongly emphasized. In cases of tuberculosis of the knee-joint in adults, as Dr. Ridlon has well said, it is known that conservative treatment will enable a large number of patients to recover, if the proper immobilization is carried on through a sufficient period of time. Secondly, we should go on record as absolutely condemning the resection of any tuberculous joint in children. Thirdly, amputation should be advised and instigated as a life-saving measure only in cases of extensive tuberculous joint-disease.

DR. LEONARD W. ELY, San Francisco: I shall first refer to the point that Dr. Hibbs brought out, as to why, if we resect, we do not dissect out all tuberculous material. The reason for this rests on evidence that is not, I think, absolutely conclusive. It rests, first, on the statement made by many operators that if they resected these joints, they got the same results, whether they removed much tissue or very little, or whether they performed the operation devised by Flint, a very thorough operation, and removed 3 or 4 inches of the bone. No matter which one of these methods was pursued, the result was the same, namely, a cure, provided secondary infection was avoided. It rests, secondly, on the fact that there is no known way of removing all the tuberculous tissue. No one can be sure, when he closes a wound, no matter how he has operated, that he has absolutely removed all of the diseased tissue. It rests, thirdly, on an assumption of what takes place in the joint after resection, that is, in the tissues, in and about that joint. We do not know exactly what these changes are. No one has proved them. They have been said, on good authority, to be a disappearance of the essential tissues of the joint—a disappearance of the red bone-marrow, and a disappearance of the synovial membrane. I have never seen any absolute proof of this but I believe it is true from considerable evidence in my possession as well as from evidence submitted by others. Now Mr. Fraser tells us that it is absolutely erroneous, and that red marrow, instead of being a favorable soil for tuberculosis, is an absolute bar to its occurrence. I should say that the result is probably dependent on a complete deprivation of motion. We have assumed that it was due to bony ankylosis, but bony ankylosis certainly does not take place immediately. Therefore, we are driven to the theory that it is a fibrous condition of the marrow which takes place, producing a fibrous, and, eventually, a bony union; but here again, Mr. Fraser says that fibrous marrow is a favorable seat for tuberculosis. Again we are driven to the opinion that this operation of resection, if there is no secondary infection, does cause a complete disappearance of tuberculosis at that spot.

DR. J. D. GRIFFITH, Kansas City, Mo.: In 1871, 2 and 3, when I was an intern in Bellevue Hospital, New York, in the cases there in which amputation was performed, death as a rule occurred. We always tried to get "laudable pus;" if we did not, we wondered why. We pulled our silk ligature out of our buttonholes. We did not know that these cases were tuberculosis at that time; but Dr. Ridlon and one or two others may remember, that the patients that were cured in Bellevue Hospital were the ones that came in with old sinuses, whose history ran over a series of years. Dr. J. R. Wood used to excise these joints right along, and these were the big operative cases with recovery. The patients recovered in the same percentage as they do now. There was plenty of laudable pus coming from the joints. We put them up in plaster of Paris spicas with big openings on the side. We kept the wounds well dressed and fed the patients up; and the results of the excisions did not vary very much in these cases from those in similar cases now. This is a matter of history.

DR. ALBERT H. FREIBERG, Cincinnati: It seems to me that we are liable to render ourselves guilty of too easy and too wide-spread a generalization on the subject of the removal of infected tissue in tuberculosis of the joints. It does not complicate the operation greatly to remove all the tissue that is obviously infected, and I do not see any great objection to doing so. On the other hand, there is not the best of clinical evidence that an ankylosis is required in order to obtain complete cure; and that it is a matter of comparatively little importance whether or not tuberculous tissue remains behind. I am sure that members of this Section can recollect cases of excision of the knee for tuberculosis in which non-union resulted and in which there was no recurrence of tuberculous disease. I have had such cases in my own experience, although not for some years. We need to go back to the pathology of tuberculosis and nature's methods of curing the disease in order to find out what we had best do. If we leave material obviously affected with tuberculosis, in the joint at the site of operation, it must become encapsulated by means of fibrous material and rendered innocuous in that way, be carried off by means of the circulation or the lymphatics, or else come to the surface by means of a continuous breaking down of tissue. The more infected material we take away, the less there is to be dis-

posed of by the tissues in one of these three methods. While an encapsulated tuberculous mass may be harmless to the end, it nevertheless, remains a potential source of harm. Dr. Henderson gave an instance in which tuberculous material, which at first gave no trouble, finally broke down and caused a sinus in a knee which was ankylotic. In this case, although ankylosis resulted, the sinus persisted and led to final amputation of the limb. I do not mean that by removing all infected material we always dispose of this danger, but we may do so sometimes. However much we may feel, on theoretic grounds, that the material will be taken care of, there is the danger that sometimes it will not; and therefore it had better be removed.

DR. M. S. HENDERSON, Rochester, Minn.: As regards gangrene, I must say that I have never seen it, but would merely suggest that if a tourniquet was used for any length of time it might have been the cause. Dr. Campbell speaks of saving as much bone as possible to prevent shortening. My experience is that a patient with a stiff knee gets about better with from an inch to an inch and a half of shortening than if the leg is the same length as the normal one. Dr. Ridlon advises against resection of tuberculous knees in children and with this I am entirely in accord. In my paper I am talking only of tuberculosis in adults showing bony destruction. Dr. Hibbs made the point that the elimination of motion is probably the cause of the eradication of the disease and should be thought the factor rather than the extensive removal of bone. This is true to a certain degree, but I feel that bony ankylosis should be obtained. Tuberculosis is seen in the shaft but very rarely, whereas it occurs more often in the metaphysis and epiphysis. By attaining bony ankylosis we change the soft bone to hard bone and the disease is cured. I might mention a patient whom I saw, a woman who had had a resection for tuberculosis 25 years ago in Germany. We took a roentgenogram and found the medullary cavity of the femur to be directly continuous with the medullary cavity of the tibia and that we had practically one bone instead of two. I have not used the patella in this class of cases, as suggested by Dr. Hibbs. It is a splendid means of obtaining an ankylosis when it is wanted in infantile paralysis cases, but in a tuberculous knee-joint would not cause what seems to me important—a bony ankylosis, nor would it assist nature by removing the bulk of the tuberculous disease. In the resection of a knee-joint for tuberculosis, we save the patella, whenever possible, for, if it is healthy, its removal will result in considerable trauma and cause healthy tissue to be opened. If the patella is diseased, it cannot be used and, if bone is removed from the tibia and femur, the patella is not necessary in the ankylosis. I have not used local anesthesia in resections, but think that it would be a help in certain cases. We use a light ether anesthesia in patients having tuberculosis of the lungs and have not had any bad results. Dr. Albee mentioned the use of the Lane plate by Osgood. All our patients here reported were operated on previous to March, 1913, before Osgood's results were published. It is true that union is sometimes slow. Experimental work has shown that eighty-three days is the earliest time in which bony union could be demonstrated in closed fractures in animals and it usually took from one hundred and fifty to one hundred and seventy-five days.

A Museum of Fatigue-Eliminating Devices.—In Providence, R. I., a museum of devices for the elimination of unnecessary fatigue has been started (Gilbreth, F. B.: *Scient. Am.*, Nov. 14, 1914). It emphasizes the paucity of such devices for, in spite of the fact that tens of thousands of letters requesting cooperation were sent out and replies indicating willingness to cooperate were received, the museum contains at present only six simple devices, chiefly various types of chairs. One device permits work which has always been done standing to be done sitting. Another device permits the worker to stand part of the time at work which usually had been done sitting. Another type eliminates vibrations from the floor. This is said to have been very successful.—*Scientific American.*

THE BACTERIOLOGIC EXAMINATION OF THE URINE IN A CASE OF ECLAMPSIA *

G. F. DICK, M.D.
AND
G. R. DICK, M.D.
CHICAGO

Recently we[1] published the results of the bacteriologic examination of the urine in parenchymatous nephritis. The frequency of renal lesions in eclampsia suggested the bacteriologic examination of the urine in this trouble.

According to Williams[2] the infectious theory of eclampsia was advanced as early as 1885, and various bacteria have been cultivated from the urine and also from the tissues and juices of the body. Other investigators, however, failed to confirm these findings and Williams states that his own investigations have given negative results. It seemed desirable, however, to examine the urine of eclampsia by the newer cultural methods, which had yielded positive results in nephritis.

The patient from whom the urine was obtained was a woman 30 years old who was admitted to the obstetric ward of Cook County Hospital during the night of September 15, 1914. The patient was in convulsions when admitted, and a forceps delivery was made during the night. When seen at 10 a. m. the following day she was still in coma and showed marked edema of the face and extremities. Since admission she had voided 3 ounces of urine. She died about twenty hours after delivery. With aseptic precautions a specimen of urine was obtained by catheter. It measured 15 c.c., was turbid and smoky and contained a large amount of albumin, with numerous coarsely-granular casts, many red blood cells, some polymorphonuclears, spherical pear-shaped and tailed epithelial cells.

Aerobic cultures on blood-ascites-agar showed no growth. Anaerobic cultures on the same medium and dextrose-agar shake cultures showed many slowly-growing colonies which were visible on the third day. They consisted of gram-negative bacilli about the size of influenza organisms. They grew anaerobically only, forming pin-point, transparent colonies on blood-agar without affecting the blood. In twenty-four hour cultures they were sluggishly motile. Satisfactory growths on the ordinary mediums were not obtained.

The intravenous injection of the organisms from ten blood-agar slants produced no apparent result in a small dog.

In one of the agar shake cultures there developed a single colony of gram-positive short chained streptococci which did not grow in transfer.

Similar cultures of catheterized specimens of urine from normal puerperal women gave in one case entirely negative results; in a second case a few colonies of staphylococcus.

Little can be said concerning the significance of the organisms described. We have, however, found in a number of nephritic urines organisms resembling those cultivated from the urine of the case of eclampsia and it seems to us that the results described indicate that the infectious theory of eclampsia is still worthy of consideration.

* From the Memorial Institute for Infectious Diseases, Chicago, Ill.

1. Dick, G. F. and G. R.: THE JOURNAL A. M. A., Nov. 7, 1914, p. 1661.
2. Williams: Text-Book of Obstetrics, New York, 1904.

REPORT OF A CASE OF ACUTE DILATATION OF THE STOMACH

ANTONIO MAYORAL, JR., M.D.
PONCE, P. R.

In a case of double pyosalpinx the patient suffered an acute dilatation of the stomach during the operation, so that it could be seen and examined. The case is of special interest, first, because it cannot be explained by the most common theory of the cause of this condition, that is, constriction at the lower end of the duodenum between the root of the mesentery and the vertebral column by the dragging down of the small intestine; second, because it occurred in the midst of the operation and not as a postoperative complication, and third, because the patient completely recovered with only slight discomfort in the epigastrium for the next twenty-four hours.

History.—P. C., a mulatto girl aged 21, not married, with no tuberculosis or cancer in the family, with syphilitic marks on the arms, upper abdomen and legs, came to me because of profuse bleeding at menstrual periods, a white discharge and pain in the left iliac fossa. Vaginal examination revealed a creamy discharge from the cervix of six or eight months' duration. The cervix was eroded. The uterus was not very movable. A tender mass the size of a hen's egg could be easily felt on the left side.

Operation.—Under ether anesthesia, dilatation and curettage were done. The patient was placed in the Trendelenburg position, the abdomen painted with 7 per cent. tincture of iodin and washed with alcohol, and a 3-inch incision made in the median line, between the umbilicus and the symphysis pubis. The peritoneum was opened between forceps. Extensive pelvic inflammation was found; both tubes were attached by fresh adhesions to the surrounding structures. Without much trouble the right tube was freed and amputated by clamp and ligatures of No. 2 catgut. The left tube was somewhat more adherent, but it was finally freed, and after having ligated the tube as it leaves the uterus and the free edge of the broad ligament just under the tube, and as I was about to place my clamp to amputate it, the patient began to act queerly, the respiration quickened, the pulse became rapid and thready, and the intestines came out of the wound and were held back with difficulty. I continued the operation as well as I could, and in placing my hand into the wound was surprised to find the stomach at the upper edge of my incision and a second later about three fingers breadth from the symphysis pubis. The stomach tube was ordered passed and a good quantity of gas was let out; the stomach gradually returned to its normal size, but no liquid was obtained. Anesthesia was then stopped and the operation was rapidly finished, continuous catgut sutures being used for closing. The table was lowered to the horizontal position, and the patient dressed and sent to the ward. Recovery was uneventful.

The patient was anesthetized by our special anesthetist, a nurse of large experience. The case from the beginning was hard to manage and so rigid that I had to call for deeper anesthesia continuously, the patient not becoming fully relaxed until shortly before she developed the dilatation of the stomach.

The causes of acute dilatation of the stomach are given as: First, constriction of the lower end of the duodenum between the root of the mesentery and the vertebral column by dragging down of the small intestine (Albrecht). It is obvious that in this case such a constriction could not have occurred, as the patient was in the Trendelenburg position when she developed the dilatation, and the intestines were thrown toward the diaphragm. Second, excessive secretion and paralysis from overdistention (Fagge). In this case, nothing but gas was let out of the stomach, there was no excessive secretion. Third, infarction, peritonitis, dilatation as a part of general involvement of the intestines (P. Muller). But there was no general peritonitis in this case. What then was the cause of the dilatation? I believe that in this case at least we must look for the cause, first, in a paralysis of the stomach center in the brain due to the anesthesia that had to be pushed to its limit, as the patient could not be relaxed otherwise; and second, to the rapid development of gases within the organ, a thing favored by the paralysis of its wall.

QUININ SALTS IN POSTOPERATIVE CASES

PRELIMINARY REPORT

EDMOND BONNOT, A.M., M.S., M.D.
ST. LOUIS

The method originated with me accidently in May, 1914. After operating for acute appendicitis on two malarial patients I instructed the nurse to give the patients 10 grains of quinin muriate by rectum every six hours until such time as the patient could take quinin by mouth. To my surprise these patients had no nausea, vomiting, gas pains, backache or postoperative thirst. The result was so marked that I have used it in all laparotomies since, with the following results in twenty cases including the various abdominal operations:

No nausea or vomiting in 10 cases.
Slight nausea and vomiting in 6 cases.
Much nausea and vomiting in 4 cases.
No gas pain in 19 cases.
Slight gas pain in 1 case.
No backache in 20 cases.
No desire for water within the first twelve hours in 9 cases.
Only moderate thirst in 11 cases.

In all cases the postoperative thirst was much retarded.

Dr. Willis Young of St. Louis has since used this method in all his laparotomies with corresponding results.

The Sisters at St. Anthony's Hospital have been so impressed with this method that they have used it as a routine postoperative procedure in more than one hundred cases with only one case in which there seemed to be no benefit.

The technic is simple: Quinin muriate, 10 grains, dissolved in 2 ounces of water at 100 F. is given by rectum immediately after operation, followed by saline proctoclysis or (in septic cases) by 6 ounces of olive oil. The quinin is repeated every six hours for four doses. If after the quinin is stopped the patient shows any signs of gas pains or backache, another dose will give immediate relief.

I use the muriate of quinin because of its solubility; but any salt of quinin will answer. Dr. Willis Young reports that he has used the sulphate in suspension with equally good results.

So far I have not had any idiosyncrasy to quinin in this method or noticed any bad effect. In two cases of pregnant women who were operated on for acute appendicitis I did not use the quinin, and both suffered much with gas pain. Whether or not quinin would have been contra-indicated in these cases I do not know.

In all cases recorded, ether was used as the anesthetic. I do not attempt to explain the action of quinin in this relation except from its analgesic effect and the prevention of the temporary postanesthetic paralysis of the intestines.

3329 Park Avenue.

Special Article

PRACTICAL PHARMACOLOGY *

INTRODUCTORY

Under the title given above it is proposed to publish a series of articles in which there will be discussed the materia medica, pharmacology[1] and chief therapeutic uses of those drugs which have been accepted by the Council on Pharmacy and Chemistry for inclusion in the "Handbook of Useful Drugs."[2] Convenient forms for prescribing them will be suggested and the advantages of depending on standard drugs rather than on commercially exploited nostrums will be demonstrated.

Several years ago THE JOURNAL published a somewhat similar series of articles under the title "The Pharmacopeia and the Physician," and while the same general plan will be followed in the present series, the discussions will be limited almost entirely to the really essential drugs of the materia medica, as indicated in the title of the articles.

It is evident that the therapeutic use of drugs requires some knowledge of their pharmacologic actions, but many physicians fail to appreciate the true value of pharmacology. Frequently, too, it is impossible to distinguish the literature of the disinterested investigator from that issued by those who are commercially interested in the products which they discuss. It is hoped that in these articles we may be able to present the essentials of the pharmacology and therapeutics of the important drugs so that they may be useful to the general practitioner who has not the time and the hospital facilities for clinical research.

We trust that this treatment of the subject, so far from satisfying the reader, may stimulate him to further inquiry and the use of the larger works on pharmacology and therapeutics.

The pharmacology of the different drugs will be discussed very briefly in some cases, somewhat more comprehensively in others, but sufficiently in each case to afford a basis for the best therapeutic use of the drug under consideration. The discussion of quinin and digitalis, respectively, illustrates the principle followed. Quinin finds its greatest use in the treatment of malaria, in which its value depends on its killing the organisms which are found in the blood, and the secret of the successful employment of quinin is to get the requisite amount in the blood at the proper time; hence dosage and methods of administration are of greater importance in that case than a knowledge of the various other pharmacologic actions of quinin, beyond the mere fact that it is a general protoplasm poison, which is consequently injurious to all tissues with which it comes in contact in sufficient concentration. Digitalis, on the other hand, does more harm than good in the hands of those who use it without a pretty accurate knowledge of its pharmacologic actions; it becomes necessary, therefore, to devote more attention to the pharmacology of digitalis than to that of quinin.

Drugs produce their effects by increasing or decreasing the normal functions of the structures on which they act, and in so doing they do not themselves produce an appreciable amount of energy. The failure of a drug to produce its expected therapeutic effects may often be explained by the condition of the organ on which it acts. A grasp of this relationship between drugs and the organism will serve to simplify the understanding of their uses and limitations, and will prevent frequent disappointment.

Every drug exerts a variety of actions, but only a few of the actions of any drug are of benefit in any given condition; the others are negligible or detrimental. Thus, in the treatment of night sweats, atropin is used on account of only one of its many actions, namely, its power of limiting secretion.

The therapeutic usefulness of a drug depends on the fact that it exerts a far greater action on certain organs or tissues than on others. Strychnin, for example, is capable of combining with certain cells in the central nervous system and affecting them profoundly, while leaving the other cells of the body practically unaffected.

The influences of age, sex, weight, diet and many other factors which modify the actions of drugs are generally recognized and do not call for detailed discussion here, but every physician encounters occasional disappointment in the use of a drug on which he has come to rely, and we shall point out some of the most common causes of the variability of action, which are frequently overlooked because they are deemed of too little importance to merit careful consideration.

ABSORPTION AND ELIMINATION

The intensity of the action of a given drug usually depends largely on the total amount which acts at one time. Hence, the action of those which are absorbed into the circulation depends on the amount in the blood at one time, which is determined to some extent by the ratio between the rate of absorption on the one hand and that of elimination or destruction in the body on the other. A large dose of a drug may produce less effect at one time than a small dose administered in the same way at another time, the difference in the intensity of action being due to differences in the rates of absorption and elimination. The intensity of action may be influenced in other ways.

The degree of dilution in which a salt is administered not only influences the intensity of a given action, but may even determine its nature. A concentrated solution of magnesium sulphate may cause nausea, whereas the same amount of the salt in dilute solution will cause purgation. Magnesium sulphate usually causes only watery diarrhea when it is administered properly, but it has been known to cause death when administered in the usual way, because of its rapid absorption and slow elimination.

A common cause of disappointment is the want of exact knowledge concerning the absorption of drugs. It is often asserted, and accepted without question, that because a given substance is very soluble in water, it must necessarily be absorbed readily from the alimentary canal. Disregarding the relatively slow absorption of soluble purgative salts, we may call attention to the fact that for some unknown reason,

* This is the first of a series of articles on useful drugs—on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form.

1. The terms "materia medica" and "pharmacology" are often somewhat loosely used. Materia medica treats of the physical and chemical properties of drugs and of their pharmaceutical preparations. Pharmacology, or pharmacodynamics, treats of the actions which drugs exert on normal animal tissues or organs. For example, the paralysis of vagus endings in the heart by atropin is one of its pharmacologic actions.

2. The Council has made a careful selection of all drugs and preparations, irrespective of their nature, whether official or unofficial, proprietary or non-proprietary, which seem to be the best for the treatment of diseases, and these have been included in the little volume entitled, "A Handbook of Useful Drugs."

some of the *very* soluble glucosids are absorbed slowly and irregularly from the gastro-intestinal tract; also that certain glucosids or resins which are wholly insoluble in water are absorbed fairly rapidly from the gastro-intestinal tract. In other words, we must recognize the fact that every drug is a law unto itself in regard to its rates of absorption and elimination.

Most drugs are not absorbed readily from the stomach, but must pass into the duodenum before absorption begins; it may follow, therefore, that when the gastric movements are interfered with by disease or drugs, and especially when the pylorus remains in tonic contraction, as it does at times after large doses of morphin have been taken, drugs may remain unabsorbed in the stomach for hours after oral administration. Drugs should be administered subcutaneously or by the rectum when it is suspected that the gastric contents will be prevented from passing into the duodenum in the usual manner.

Comparatively few drugs are absorbed from the unbroken skin, and the use of ointments and plasters containing active alkaloids is irrational in the main; the good results which may follow their use in most instances are not due to the alkaloids. For example, in the case of opium and lead wash — a most unscientific mixture, since the morphin in that case is valueless — the beneficial results are due to the astringent action of the lead wash. A few substances which are readily miscible with oils and fats penetrate the skin sufficiently to act on the sensory nerve-endings, but our knowledge of this subject is far from complete.

Another cause of disappointment lies in the fact that physicians sometimes forget that locally acting drugs may fail to exert an effect after absorption similar to that observed in the alimentary canal. Tannin, for example, acts as an astringent on the mucous membrane of the gastro-intestinal tract after its oral administration, but it is not absorbed in the free state and does not exert such an action on other parts of the body. Antiseptics are still sometimes recommended for their action on micro-organisms in the circulating blood, but such misleading advice occurs chiefly in "interested" literature.

We are not so well informed as we should be even on the subject of dosage; it is often stated as a rule that the oral dose of a given drug is about twice as large as the subcutaneous dose, and that the rectal is about twice the oral. These ratios apply to very few drugs indeed; the attempt to regulate the dosage of some drugs by this rule would result disastrously. In fact, death has resulted from the subcutaneous injection of an amount of strophanthin equal to one-half of the oral dose. This illustrates the necessity for a better acquaintance with a few drugs, rather than a superficial knowledge of a large number. At best drugs are like two-edged swords capable of doing harm if used improperly, and if we assume the responsibility of using them we owe it to our patients to know as much as possible about their actions.

SYNERGISTIC ACTIONS

It was formerly customary to use mixtures of many drugs having supposedly related actions without any clear idea of their synergistic effects, but such mixtures are not used at present by educated physicians, for we are coming to have a better understanding of the synergistic actions of drugs which are useful in some cases and harmful in others. Some of these synergistic actions will be discussed when we consider the drugs exhibiting them.

MODES OF ADMINISTRATION

Unless the oral method is contra-indicated, drugs should be administered by the mouth. While the other methods advocated from time to time may be suitable for special cases, and in the hands of those who have developed a special technic, the oral administration will suffice in the vast majority of cases.

The intravenous injection of a variety of drugs has been advised, but this method is distinctly dangerous in the hands of any one who is not skilled in its use, and it is often disappointing even with the best technic.

Compressed tablets of insoluble drugs do not always disintegrate rapidly in the stomach, and such drugs are preferably given in the form of mixtures or as dry powders, which may be enclosed in capsules. Many of the ready-made pills tend to become harder and less readily disintegrated when long kept. Freely soluble salts, such as potassium bromid, taken in doses of 0.3 gm. (5 grains) or more, may give rise to gastric irritation with nausea, when they are administered in concentrated solution, or in the form of compressed tablets, which form concentrated solutions on dissolving in the stomach. Such salts should be dissolved and mixed with from ten to thirty times their weight of fluid before being administered.

Nausea and vomiting sometimes follow the administration of various drugs. When this symptom arises from local irritation of the stomach it may be avoided either by dilution or by a different mode of administration. In other cases, as in members of the digitalis group, the nausea and vomiting, being due to a stimulation of the vomiting center in the medulla, are not influenced by the mode of administration. In such cases, nausea is to be avoided only by regulation of the dose. Before resorting to inconvenient methods of administration, therefore, one should be certain that the method proposed will actually give relief from the disagreeable symptom.

Idiosyncrasy, tolerance and cumulation, so called, will be discussed in connection with those drugs in the use of which they are important factors.

MULTIPLICATION OF PREPARATIONS

The present era of pharmacy and therapeutics is marked by the multiplicity of alleged remedies urged on the attention of the prescriber. This multiplication of preparations is attributable largely to the influence of commercial interests, which have often had more weight than considerations of pharmacologic and medical science and have overshadowed the interests of the sick.

In this confusion physicians will often find themselves at a loss how to choose wisely the most efficient agent. A careful study of the new remedies offered will show that few present any new therapeutic action or are specifics for particular diseases. Most of those which are worthy of consideration claim advantage over the older remedies in the avoidance of disagreeable side effects. In a considerable number of cases these claims have not been realized and the remedies are needless encumbrances to our materia medica. Before accepting a manufacturer's claim that his preparation is preferable because it avoids undesirable by-effects, one should make sure that this freedom from disagreeable effects is not accompanied by lack of therapeutic efficiency.

In choosing remedies the practitioner will gladly welcome the help extended by the Council on Pharmacy and Chemistry in sifting the mass of evidence and selecting for regular use the remedies listed in the new volume, "Useful Drugs." In admitting preparations to the book New and Nonofficial Remedies, the Council has adopted a liberal policy; it has admitted any drug which has probable value if exploited in an unobjectionable manner. Though the Council has been in existence for nearly ten years and though during that time manufacturers have been afforded ample opportunities for submitting evidence of any advantages which their preparations possess, among the thousands of these advertised to physicians, not more than 340 are enumerated in New and Nonofficial Remedies, and of this number not more than a score have been found of sufficient importance to merit inclusion in the "Handbook of Useful Drugs," for admission to which evidence of merit is essential.

It is obviously impossible in these articles to discuss any considerable number of the popular nostrums. A few of them, however, will be mentioned, chiefly to show the methods of misrepresentation employed, and the necessity of fostering the use of standard drugs of proved value and well-known side actions for which proper allowance may be made in the administration.

These side actions deserve more attention than they usually receive. We have been prone to consider unfavorable symptoms in patients as unavoidable manifestations of the diseases from which they suffer in many cases in which the drugs were contributing causes at least. We must face the question squarely and recognize the fact that there is no such thing as an ideal drug. When a manufacturer asserts that his preparation possesses all the advantages of a given drug with none of its disadvantages, his excessive optimism is obvious.

CLASSIFICATIONS OF DRUGS

Buchheim classified drugs about sixty years ago according to their more prominent pharmacologic actions, and this classification has been retained with some modifications to the present time, despite the fact that it has many disadvantages. No strict classification is possible, because every drug has a variety of actions, and no two have exactly the same range of activities.

We shall make no effort to group the drugs in any rigid way in the following series of articles, and it is understood that any grouping attempted is merely suggestive and intended to facilitate the convenient discussion of the various drugs. The following examples will serve to illustrate the disadvantages of attempting a too rigid adherence to any classification: The convulsions produced in frogs by strychnin, morphin, thebain and some other drugs are identical in character; yet in view of their clinical use, it would not be desirable to place strychnin and morphin in the same class; atropin and morphin are antagonistic in small doses and synergistic in large. The local anesthetics, the general anesthetics and some other groups, on the other hand, present no such difficulties of classification.

(To be continued)

Preventogram.—It is better to isolate a suspicious case, that does not develop a communicable disease, than to expose many persons while the nature of the illness is in doubt.—Pittsburgh *City's Health.*

Therapeutics

PREVENTION IS GREATER THAN CURE

(Continued from page 55)

XV

Treatment

The preventive measures have already been referred to and described. They consist of proper bathing to keep the skin in good condition; proper clothing, depending on the region, season and exposure; proper heating and ventilation of living rooms, bedrooms and buildings in which persons are employed, and in the case of the child, proper heating and ventilation of the schoolrooms. As previously stated, a child may be overclothed for play, as well as underclothed for sitting in cool rooms. The child should be extra well clothed, if he attends an open-air or open-window school during the cold seasons; such schools probably are among the greatest means of prevention of coryza, sore throats and coughs. On the other hand, the too severe exposure of young children and babies to dampness and winds is inexcusable and does not increase their resistance against catching cold, and often precipitates more serious conditions. Any person who has a tendency to nasal or pharyngeal colds should not suffer undue exposure at night. Too many windows being open may cause too much direct draft over the face. Fresh-air sleeping should be governed by common sense. Cold daily sponging of the child's face, neck and chest, followed by quick friction, is a splendid means of decreasing the likelihood of catching cold or becoming chilled. Older persons may take cold showers or cold plunges in the morning, if it is advisable in individual cases.

To repeat, it is urged that while most acute colds, if not all, are probably due to germs, still acute congestion and more or less nasal secretion may be caused by drafts or currents of cold air causing chilling of some uncovered surface of the body, especially if the person is overheated or is perspiring from exertion or from being in an overheated room. This congestion forms a splendid culture ground for the development of germs.

Children especially should not be subjected to unnecessary infection by being taken into crowded cars, stores or into various assemblages, where it is impracticable to avoid close contact with coughing or sneezing persons who do not properly protect the surrounding atmosphere by using handkerchiefs.

Schoolchildren with acute colds should either be sent home or should be taught to prevent spraying the atmosphere with droplets of infection and thus infecting surrounding children. If a case of acute coryza occurs in a family, the family should understand that it is contagious, and the sick should be isolated from the well as effectively as practicable.

As so many times urged, a child or adult who has repeated colds should be examined and properly treated medically or surgically by a nose and throat specialist. The family should also be taught that the exchange of handkerchiefs and the use of the same towels when one member of the family has a cold or sore throat is inexcusable. Direct contagion by this method is probably very frequent. During all colds the nasal and throat secretions or excretions should be received into paper handkerchiefs, or pieces of cheese-cloth, and either immediately burned or deposited in a paper bag for burning later. If handkerchiefs are used, they should be washed separately and soon.

The harm which a too dry indoor atmosphere can do to mucous membranes of the upper air passages is well described by Wolff Freudenthal.[2] The drying of these mucous membranes caused by evaporation due to the inhaling of too dry air leaves the membranes unprotected, and the first irritant that attacks them may cause an inflammation. It is necessary, therefore, to teach and advise that more moisture be furnished the air of all houses, buildings, schoolrooms, churches, theaters and other places of assemblage.

By all of these methods the frequency and number of nasal colds will be greatly diminished.

Acute coryza having begun, an attempt should be made to abort it. There are various methods of relieving internal congestions, and the general principles are the same in all cases, wherever the localized inflammation may be. These general methods are some means to reduce an increased temperature, some means of bringing the blood to the surface of the body and increase perspiration, some means to produce free catharsis and thus to deplete the blood-vessels and lower the blood-pressure to relieve indirectly the tension in the region of congestion, and some means to prevent the development of the second stage, or stage of secretion, if possible. Methods used to meet one of these indications will many times meet one or more of the others; hence the treatment is often very simple.

If the patient is first seen in the morning, or before the middle of the afternoon, the best treatment is a saline purge of some description, as exemplified by the Seidlitz powder or by the effervescing magnesium citrate or Rochelle salt, or castor oil if that is preferred. If the patient is seen first in the evening, a less quickly acting cathartic is advisable, and none is better than a small dose of calomel, as from 0.05 to 0.20 gm. (about 1 to 3 grains), depending on the age of the individual, combined with 0.50 to 1 gm. (7½ to 15 grains) of sodium bicarbonate. Or, 1 grain of calomel may be given with an ordinary compound aloin pill or tablet. The old-fashioned Dover's powder is still given by many physicians and often works well, but may cause considerable nausea. Also, opium or morphin in any form tends to inhibit free action of the bowels, which is undesirable. One of the best treatments is one of the coal-tar products, such as antipyrin, acetanilid or acetphenetidinum. Any one of these may be given in one fair-sized dose or in two medium-sized doses, or in several small doses. One gm. of antipyrin would be a full dose; 0.50 gm., repeated in five or six hours, would be a medium dose; 0.30 gm. of acetanilid would be a large dose, and 0.10 gm. might be repeated at three-hour intervals for three times. A satisfactory method is a combination of acetanilid with sodium bicarbonate, and a prescription similar to the following is often very valuable:

		Gm.		
℞	Acetanilidi	0.25	or	gr. v
	Sodii bicarbonatis.....	2.50		gr. xl

M. et fac chartulas 5.
Sig.: One powder every two or three hours.

A similar combination may be given in tablets, if preferred. It should be remembered that caffein has been shown not to protect the heart from depression caused by large doses of a coal-tar product; therefore, there is no object in adding caffein to such a prescription. When these coal-tar products are ordered, it is well to give coincidently hot lemonade. Perspiration is more readily caused by this means.

Provided the patient is not soon to be subjected to exposure, a hot bath is another efficient means of relieving internal congestions, and can be used coincidently with the other treatment. Acidum acetylsalicylicum (aspirin) is now more largely used than almost any other drug to abort colds. The laity, on account of the instruction which they have received of the dangers of acetanilid and similar drugs, now all buy and use this drug with the greatest freedom. It can cause cardiac depression, and should not be used *ad libitum*. If preferred, it may certainly be ordered.

Rhinitis tablets are sold everywhere to the laity, and are largely used by physicians. These are various combinations of morphin, atropin, strychnin and aconitin. The minute dose of aconitin ordered probably generally has no action. If one desires the activity of aconite, it is best to give it in a tangible form and dosage, namely, the tincture of aconite, a drop perhaps every half hour or hour, until the pulse shows the activity of the drug. However, this treatment ordinarily requires that the patient be seen within a certain number of hours by the physician, to ascertain whether or not the aconite should be stopped, unless the doses are limited in number. The old aconite treatment of colds has mostly given place to the newer treatments described above. The whole rhinitis tablet combination probably represents principally the action of atropin with some help from the morphin, both of which will dry up the secretions of the nostrils and throat. The small amount of strychnin probably is not very active. Sometimes minute doses of quinin enter into these combinations, but that probably is not active. In other words, it is a question if a small dose of atropin sulphate, given frequently, does not act as well as one of these rhinitis combinations.

There is no question about the drying up of secretions by morphin, if this drug is pushed. Rarely is such treatment needed. The old-fashioned treatment of a hot foot-bath, a hot whisky punch, and the patient put to bed is a treatment that is often successful. The upper air passages and the head are relieved from congestion by such treatment, the blood-vessels of the surface are dilated by the alcohol, and the patient perspires more or less and the treatment is conducive to comfort. In this age, however, when other vasodilators are accessible, it is rarely necessary to resort to alcohol.

Quinin sulphate has been used for years as an abortive treatment of colds, and the laity, until more recently adopting acetylsalicylic acid, have always resorted to this drug. Small doses would probably not have any very decided action; large doses are inadvisable at this stage of the congestion because of the tendency to congest the middle ear.

Spraying or snuffing solutions into the nostrils at this stage is inadvisable. The throat may be gargled with warm physiologic saline solution, which is roughly represented by ¼ teaspoonful of salt to half a glass of warm water. If the patient has been known to be exposed to some acute throat or nasal infection, more active antiseptic gargles and sprays may be used; but an acute coryza will rarely be aborted by local treatment.

If the inflammation is not aborted and the second stage develops, that of profuse mucus and some mucopurulent discharge, then cleansing of the nose and throat becomes urgently needed. At this stage all of the foregoing abortive measures should cease. A patient who has been more or less deprived of food,

2. Freudenthal, Wolff: New York Med. Jour., Jan. 3, 1914, p. 1.

except a small amount of liquid nourishment for from twenty-four to thirty-six hours, may now resume his normal diet.

The more or less purulent discharge from the nostrils should not be allowed to remain blocking up the passages. Consequently, atomizing with warm saline and alkaline solutions should be more or less frequently done. Various compound solutions or tablets for solution are offered, but there probably is no advantage in these combinations over more simple ones. The simplest cleansing solution is one made from ½ teaspoonful of salt and ½ teaspoonful of sodium bicarbonate to a glass of warm water, or half these amounts for half a glass of water. To be properly soothing, the solution should always be warmed. The same solution may be used as a gargle. If a mild antiseptic is needed, saturated solutions of boric acid or borax are efficient. If stronger antiseptic solutions are required or advisable, hydrogen peroxid is valuable, as 1 part of the official aqua hydrogenii dioxidi to 4 or 5 parts of warm water for a gargle, or 1 part to 7 or 8 parts of warm water for a nasal spray. Nasal spraying and proper cleansing of the nose protects the adjacent sinuses from infection.

Cleansing the nasopharynx by snuffing back a solution from a teaspoon or a small vial, or snuffing back a spray, or gargling and then throwing the head forward and washing the nasopharynx, protects the eustachian tubes from infection. Two cautions should be suggested: first, that douching of the nasal passages should not be done with the nostril blocked, or with a high placed douch reservoir, as the pressure is likely to be sufficient to send fluid into the eustachian tubes or into the sinuses, and cause inflammation of such parts. Most of the patented douch apparatus are inadvisable. The second precaution is that it is not well to cleanse the mucous membrane of the nostrils too thoroughly of mucus before the patient goes into the outside air, especially if that air is dust-laden. The proper time to spray is when the patient is to remain in the house for a short time; or if he is sprayed and then must go out of doors, he may receive a non-irritant oil spray to furnish a coating for the mucous membrane, this to be used after the alkaline spray. Or a small plug of cotton may be placed in the nostrils.

If the secretion from the nose is tenacious and hard to dislodge by blowing the nostrils, ammonium chlorid may be a drug of value. It has been used as a stimulant to the upper air passage mucous membrane as well as to the bronchial mucous membrane. It may be given in a simple preparation as:

		Gm. or c.c.		
℞	Ammonii chloridi.....	5		ʒ iss
	Syrupi acidi citrici.....	25	or	fl.ʒ i
	Aquae.....q. s. ad	100		fl.ʒ iv

M. et Sig: A teaspoonful, in water, every three hours.

If the coryza tends to become subacute and prolonged, tonic treatment is required; a small dose of quinin and a small dose of iron, with or without arsenic and strychnin, are advisable. Or calcium glycerophosphate may be given in doses of 0.30 gm. (5 grains) in capsule, three times a day, after meals. The following tonic capsule may be used, and the doses may be modified for a child:

		Gm.		
℞	Arseni trioxidi.....	0.04		
	Strychninae sulphatis.....	0.04	*aa*	gr. ⅔
	Ferri reducti.....	1.0	or	gr. xv
	Quininae sulphatis.....	2.0		gr. xxx

M. et fac capsulas siccas 20.
Sig.: A capsule three times a day, after meals.

If the mucous membrane of the nose and throat does not return to health, and the secretion of mucus does not seem to be sufficient, a great promoter of secretion is an iodid, and the best salt is the sodium iodid. The dose required is not large; 0.10 to 0.20 gm. (1½ to 3 grains) three times a day, is generally sufficient.

Various menthol, camphor and pine oil preparations are used as sprays or applications for the nostrils, sometimes with good results, or as inhalants when the nostrils tend to become closed and cause discomfort by occlusion. Such treatment has its use at times. Spraying with suprarenal solutions is sometimes of advantage, but sometimes is followed by more congestion. Some nose and throat specialists use suprarenal preparations constantly. Such treatment certainly many times is efficient in temporarily relieving congestion and giving comfort.

This discussion of the treatment of common colds would not be complete without reference to the vaccine treatment. While the exact value of such treatment has not been determined as an abortive treatment or as a treatment that shortens the course of the disease, the enthusiastic recommendation of such treatment by some writers should be recognized. When there is sinus infection, autogenous vaccines would seem indicated.

An interesting paper on the subject of vaccine treatment of common colds, including considerable bibliography, is that of Dr. Jessie W. Fisher.[3]

ACUTE PHARYNGITIS

The abortive treatment of this inflammation is the same as that described for acute colds; but if a child is discovered to have a sore throat, a swab should be sent to the board of health for examination, and the child should be immediately sent home, lest diphtheria or scarlet fever be the cause of the condition.

With a simple pharyngitis, soothing alkaline gargles, as previously described, should be the treatment. A very simple, pleasant and efficient gargle is as follows:

		Gm. or c.c.		
℞	Acidi borici.....	2		ʒ ss
	Potassii chloratis.....	5	or	ʒ iss
	Aquae menthae piperitae...	200		fl.ʒ vii

M. et Sig.: Use undiluted as a gargle, every three hours.

(*To be continued*)

3. Fisher, J. W.: Boston Med. and Surg. Jour., June 5, 1913, p. 834.

One Minute Biographs.—No. 1. The Father of Preventive Medicine. The early history of our hero is veiled in myth and mystery. Born of a persecuted race, adopted as a foundling by a princely house, forced to flee the country for committing murder, the subject of this sketch exhibited marvelous insight and remarkable powers of administration and leadership. Although not a physician as we understand the term, and living long before the days of bacteriology, he yet was able to draft and enact a sanitary code whose guiding principles are still regarded as correct. In this code he originated an entirely new system of medicine, totally opposed to the prevailing plan. For the curative and therapeutic methods then universally followed, he substituted the more philosophic and wiser hygienic and preventive method. Moreover, in the regulations which he formulated, emphasis is laid on discharges from the body (blood, pus, mucus) as vehicles of disease, and on personal cleanliness and isolation as the chief means of preventing infection. A hygienist whose influence has made itself felt throughout the world and the father of preventive medicine.—we salute Moses, maker of sanitary laws.—*Weekly Bull. Dept. of Health*, City of New York.

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SATURDAY, JANUARY 9, 1915

THE CHLORIN CONTENT OF DRINKING WATER

Although chemically pure water does not exist in nature, the substances ordinarily present in solution are not regarded as impurities in the hygienic sense, unless either they are themselves directly injurious to health or from their association are indicative of dangerous pollution although in themselves they may be harmless. Impure water from the hygienic point of view, in contrast with the strict chemical sense, is water that is unfit for domestic use.

The amount of chlorids commonly found in natural waters is not objectionable; in fact, the quantity thus consumed is much less than the amounts constantly used in seasoning food. The quantity of chlorid in potable waters may, however, be an important indication of the pollution of surface waters with sewage, since the latter is rich in chlorid derived from urine. Aside from such accidental contaminations, the chlorin content of waters may vary greatly in different localities owing to natural causes. It is influenced by the proximity to the ocean or other bodies of saline water, by proximity to natural deposits of salt, and by geologic features of the locality. These possibilities must therefore be borne in mind in forming a judgment of the hygienic fitness of potable waters on the basis of their chlorid content.

The health authorities of the state of Massachusetts deserve credit for having demonstrated on a large scale the influence of the proximity of the ocean on the inland ground waters. It had long been appreciated that the amount of chlorin in surface waters near the seaboard is considerably higher than obtains in samples from inland parts remote from the coast. The classic investigations of the Massachusetts authorities about twenty years ago showed very clearly that the contribution of ocean spindrift and blown spray to the surface waters may extend much farther inland than had been suspected. Furthermore, it was demonstrated in Massachusetts and in the adjoining state of Connecticut that the unpolluted surface waters varied in their chlorin figures with surprising uniformity relatively to their distance from the sea. When areas with the same chlorin content were plotted on the map the successively lower "isochlorin" regions were found to run parallel with the coast line, thus demonstrating the influence of the ocean on the inland waters. Within slight margins of error the chlorin of uncontaminated ground waters of a given area approximates a normal, so that the estimation of chlorin would form a rapid method of gaging, for preliminary purposes, the relative purity of any water sample. These facts have made it essential for the sanitary water analyst to know the normal chlorin content of the waters of any given region before passing judgment on the purity of a sample of the water on the basis of the chlorin found in it.

A recent investigation conducted by Barr[1] at the University of Glasgow has confirmed the American finding that the ocean has an influence on the chlorin content of surface waters not limited to the waters of the seaboard only. It is exerted through the blown spray deposited on the land by all forms of precipitation, varying with the distance from the ocean and diminishing as it extends inland. The new report brings out the added fact that the spray particles, following the laws which govern all particulate matter, are more abundant in the lower strata of the air. For this reason the isochlor lines may become deflected by elevations of the land. The influence of the ocean spray is greater where the land is continuously low from the shore, but the prevailing winds also have an unmistakable effect. In the estimation of the ultimate results of the ocean's influence on the chlorin content of inland ground waters, the factors of the configuration of the land surface and wind prevalence are inseparably connected, as the land elevations may in great part assist or nullify any action exerted by the winds. For sanitary science the importance of having certain districts mapped out into areas of known chlorin content in surface waters on which our potable supplies are dependent becomes obvious.

AN OLD-TIME CLINICAL OBSERVER

Popular medical tradition, by one of those curious errors so frequent in popular medicine, makes the "dog-days" the time of the year when dogs are most likely to go mad, to develop rabies. As we have said before,[2] the term "dog-days" refers only to the dog star, which is then in the ascendant and has nothing to do with curs. The disease rabies incidentally spreads more virulently during the cold, damp months of winter than during the summer. The Puget Sound country had its epidemic last year beginning in

1. Barr, W.: The Influence of Ocean Spindrift and Blown Spray on the Chlorine Content of Inland Ground Waters, Jour. Hyg., 1914, xiv, 119.

2. Rabies and Dog-Days, editorial, The Journal A. M. A., July 18, 1914, p. 246.

December. Hence, if dogs should be muzzled, this should be done in the winter as well as during the summer months. It is at this time too that the evidence of rabies in stray dogs should be sought, to prevent, if possible, the inoculation of human beings.

It is interesting to realize how long ago clinical observers among physicians and surgeons recognized exactly the symptoms displayed by a mad dog, and wrote them down for the benefit of their professional brethren and for the protection of the public. John Ardern, for instance, the old English surgeon of the fourteenth century, who was a specialist on the treatment of fistulas everywhere in the body, gave in one of his lesser works, "On The Classification of Medicines," a description of the symptoms displayed by a mad dog that is nearly if not quite as complete as anything that has been done since. Mr. D'Arcy Power,[3] in his paper on the "Lesser Writings of John Ardern," quoted a paragraph from this which shows the acute powers of clinical observation of the old medieval surgeon. There is a quaintness about the old English in which it is couched that gives it an added interest and proclaims how long ago it was that such fine clinical observation was at work. We should premise that the old word for mad was "wood," and that the old printers used "y" for "i" on every possible occasion.

The tokenys of a wood dogge ben these; the furste is he knoweth not his lord ne his mayster & he falleth into a voyd goying allone with boowynge of his heed & hangynge of the eyrs [ears] as other wyse thanne he hadde hem in his he'the & the yene[4] [eyes] of him ben rede & the fome cometh out at the mowth & he wole berke [will bark] at his oune schadowe & he hath ane hos [hoarse] berkynge & other houndes fleene from hyme & berken towardys hyme. And yf a schyvere [slice] of breed [bread] be folden or wette in the bytynge of the sore & yoven [given] a dogge to ete, yf that he ete it, it is a token that the dogge is not wood, for and the dogge be wood that other dogge that the breed is yoven to wole not ete it, but that he be over moche hungry, and yf he denye to ete the seyde breed out-take [except on] the condicione aforseyd thane is the dogge wood.

Ardern dwelt on the length of time that might intervene between the bite and the development of the symptoms, and in this perhaps went farther than most of the pathologists and physicians of our time would care to follow him. There has always been some doubt, however, as to whether even years might not intervene between the bite and its consequences, and whether a person might not be a "carrier" of the as yet unknown microbic cause of rabies and still not suffer from its symptoms, somewhat as do so many pneumonia and diphtheria bacillus carriers. Ardern knew that the first symptom of the development of rabies was hydrophobia, that is, dread of water, because the very thought of swallowing a liquid brought on a spasm of the throat muscles. His paragraph on rabies in human beings deserves to be placed beside his description of the affection in animals.[5]

The bytynge of a wood dogge is more venemous & perlous [perilous] thane it is of a serpente, ffor the venyme of a wood dogge ys hydd often tymes by the hole yere togydere [whole year together] & other whyle by the ii [two] yere & after some auctours it wole endure vii yere or [ere] it sle [slay] a man. And note wheyther it be longe tyme hydd or schorte or that it slee, there comene tofore to the pacient thes tokenys medlynge & chaungynge of wytte [change of disposition] & resone & abhominacione & lothsomnesse of cold water that is clene & pure. And whane suche sygnys fallen to him that is byten of a wood hound schall unnethe or ellys never [hardly or else never] escape it.

As we learn more of the actual writings of the old medieval physicians and surgeons, we come to realize better that the popular medicine of the middle ages, so full of irrational and superstitious practices, was something quite apart from actually scientific medicine and surgery. The text-books of the old time, so often fortunately preserved for us, show us what worthy colleagues we had in medicine even six and seven centuries ago.

3. Power, D'Arcy: The Lesser Writings of John Ardern, Section on History of Medicine, Seventeenth Internat. Med. Cong., London, 1913.

4. The old spelling "yene" is less common than "eyne," but it was the typesetters who regulated spelling in the early days of printing. They spelled as they pronounced. Consistency in spelling was not then the jewel we have made it.

CAN FAT BE ABSORBED FROM THE LOWER BOWEL?

Under the ordinary conditions that prevail in the alimentary tract, 95 per cent. of all the fat ingested has disappeared from it before the intestinal contents reach the lower end of the ileum. There is experimental evidence to show that absorption of fat is not interfered with by extirpation of the large intestine. The lower end of the bowel clearly is not necessary for a satisfactory utilization of the fats of the diet.

From the evidence just cited, it does not follow, on the one hand, that the large intestine cannot participate in the absorption of fats if occasion arises, nor does it give the slightest assurance, on the other hand, that fats can find their way directly from this portion of the gastro-intestinal canal into the nutrient mediums of the body. The clinical practice, still somewhat in vogue, of injecting fat emulsions in the form of nutrient enemas into the rectum naturally presupposes an absorptive capacity on the part of the lower bowel. All of the modern studies of fat absorption, in turn, postulate a digestive cleavage of this foodstuff before it can traverse the walls of the alimentary tract.

Several years ago Neumann found that the occurrence of suspended fat particles in greater or lesser abundance in the blood can be demonstrated by an ultramicroscopic examination, and the comparative richness of the circulating medium in fat thus estimated. This method of examination has accordingly

5. Power, D'Arcy: Tr. Seventeenth Internat. Med. Cong., Section on History of Medicine, London, 1913.

been applied in the physiologic institute of the University of Vienna to settle the mooted question of fat absorption after rectal administration.[1] Nakashima found that the characteristic picture presented by the blood under the ultramicroscope—the sign of fat absorption after milk or cream are taken by mouth—is completely missed after rectal introduction of the same fat-yielding foods. Occasionally after introduction of emulsified fats in larger quantities into the lower bowel, signs of slight absorption of them were noticed; not, however, if the return of the contents beyond the ileocecal valve and toward the mouth was prevented by ligation of the intestine at that point. Histologic examination of the intestine has likewise borne out the evidence furnished by the other method. After undue distention of the large intestine there may be some travel of contents backward toward the regions where adequate digestion and absorption of fat is known to occur. It is futile, however, to depend on this uncertain and rather abnormal phenomenon of antiperistaltic propulsion for effective nutritive results. These facts serve to emphasize anew the shortcomings of the older attempts at rectal feeding, to the defects of which we have directed attention on previous occasions.[2]

In contrast with the failure of fat emulsions to be transported into the tissue fluids through the wall of the lower bowel is the fact of their disappearance from the peritoneal cavity. Like other fine suspended particles, those of fat can be withdrawn from this abdominal space and make their way via the lymphatics into the peritoneal circulation. The transport is far more easy from the peritoneal than from the somewhat similar pleural cavity. Any pathologic change, such as inflammation in the membranes lining these tissue spaces, at once stops the absorptive processes.

1. Nakashima, K.: Zur Frage der Resorption des Fettes im Dick- und Mastdarm, Arch. f. d. ges. Physiol., 1914, clviii, 288.
2. The Absorption of Fat-Like Substances, editorial, THE JOURNAL A. M. A., Sept. 13, 1913, p. 872; The Modification of Fats During Absorption, Feb. 28, 1914, p. 698.

THE BOOKKEEPING OF HUMANITY

In the study of disease, whether for the development of measures of prevention or for cure, uniform and accurate vital and morbidity statistics are so essential that no apology need be made for repeatedly referring to the subject. It is to be deplored, however, that even after many years of agitation, only about 60 per cent. of our population is included within the approved area of registration of births and deaths. Satisfactory figures regarding morbidity are recorded in a very much smaller area. The American Medical Association has continually and consistently fought for such measures. In 1846, by resolution, the Association requested the profession to take immediate concerted action to secure legislation to establish offices for the collection of vital statistics, and provided for a committee from each state to report on a uniform system of registration of marriages, births and deaths. In 1855 a resolution was adopted providing for a committee in each state and territory to study and "report on its medical topography, epidemic diseases, and the most successful treatment thereof." Some action looking to these ends has been taken at various sessions since that time, and has culminated in the model bill for the registration of births and deaths, drafted and indorsed by the Association in cooperation with other national bureaus and bodies.

Trask,[1] in a recent article, gives a brief historical account of the efforts in this and other countries to secure adequate registration laws, the requirements of effective laws, the methods of computation of vital and morbidity statistics, the results and conclusions to be obtained from them and the practical benefits to be derived from their study concerning the distribution of diseases, their prevalence, epidemiology and the means for their eradication. At present, twenty-four states have satisfactory registration of births and deaths. As shown by Trask, only one disease — smallpox — is reportable in all the states; such a highly infectious disease as scarlet fever in 45; diphtheria in 46; measles in 31; tuberculosis in all forms in 29; typhoid fever in 35; whooping-cough in 27, and cerebrospinal meningitis in 29, while many other dangerous diseases are reportable in a smaller number of states, dwindling down in many instances to one or two. Ophthalmia neonatorum, a disease responsible for much blindness and disability, is reportable in only fourteen states, and the occupational diseases, which are coming to be recognized as the source of a large proportion of the burden of expense of public hospitals and other public and charitable institutions, are so far reportable in only fourteen states, and this number only for one of the most easily recognized and prevalent occupational diseases — lead poisoning.

Needless to state, the value to the public of accurate vital and morbidity statistics, collected and recorded under a uniform system in all the states, would be great. Opposition by physicians to measures for this purpose is indefensible. Their responsibility in this respect is stated in an emphatic way by Trask when he says:

> Among practicing physicians, at least in the United States, there has at times been the feeling that the knowledge of a disease in a patient is privileged information which they should not be called on to impart. In communities where the law requires the notification of the disease this feeling has no legal basis and the physician who does not make report is not a law-abiding citizen. But aside from the legal aspects of the matter there would seem to be little justification for such a course. Every physician has a number of individuals or families who look to him, and properly so, not only for treatment, but also for such reasonable protection from dis-

1. Trask, J. W.: Vital Statistics, a Discussion of What They Are and Their Uses in Public Health Administration, 1914, Supplement 12, Pub. Health Rep.

ease as he is able to give. The failure to report the occurrence of a case of communicable disease in one patient may lead to its spread to others among his clientele whose rights he has ignored. He therefore violates the intent and spirit of the ethical principle of the protection of patients, among whom must be considered the well together with the sick. The notification of disease is in the interests and for the protection of the community, and as his patients are usually members of the community their interests are ignored and because of the antisocial whim or supposed convenience of the individual affected with a notifiable disease, they are deprived of the protection they have a right to expect. It would seem that the physician who fails to report his cases of preventable diseases required to be notified may properly be considered as actively obstructing public health administration.

Victor C. Vaughan[2] thus states the obligation of the physician to the public:

In the future the training of the medical man must be developed largely with a view to his broader relations to the public. His proper function must be to prevent, rather than cure disease. The physician's duties are to become more and more largely official in the sense that his services are to be rendered to the community, and not exclusively to the individual.

The collection of information concerning the communicable diseases, the bookkeeping of humanity, is as important, if not more so, than any type of census which a nation may make, and adequate, uniform vital statistics laws constitute the first step in securing them.

SEASONAL VARIATION IN COMPOSITION OF THYROID GLAND

If special proof were needed of the importance of an accurate standardization of therapeutic products prepared from natural resources without the refinement and chemical purification which applies to most of the inorganic compounds and alkaloids, for example, it would be found in the evidence furnished by recent studies of the very marked seasonal variation in the iodin content of the thyroid gland of different species of animals. We have already called attention to the work of Seidell and Fenger[3] on this subject. These investigators have had exceptional opportunities to obtain suitable animal material for their studies, and have used products from the very places which serve as sources for the preparation of gland products in this country. Their findings in respect to the existence of seasonal variations have been verified in a general way by data obtained in England from sheep.[4]

A repetition of the analyses of the iodin content of the thyroids of sheep, beef and hog extended for another year by the American investigators have substantiated their earlier statements and included additional determinations to show that other constituents than iodin vary regularly with the season. Thus there is a change in the phosphorus and ash content of these glands, and the amounts of these constituents vary inversely with the iodin. This is explained on the assumption that phosphorus does not form a part of the active iodin complex of the gland, but only of the supporting glandular tissues. An increase in the percentage of iodin would, therefore, naturally be accompanied by a decrease of phosphorus. Consequently it appears that neither the composition of the active iodin complex nor that of the supporting tissues of the gland changes with the season, but only the relative amounts of the two.

Several factors may be considered of importance in accounting for the seasonal change in composition and activity of the thyroid gland. Thus atmospheric temperature, diet and periods of activity of the reproductive functions might play a part. A consideration of the several causes of the seasonal change has led the public health authorities to the conclusion that the environmental temperature factor is the most important of all. Physiologically it is, of course, interesting to learn the true reason for these functional variations; but from the point of view of the therapeutic use of thyroid products, on the other hand, it is important to realize the necessity of standardizing for administration substances present in raw materials of varying potency.

2. Vaughan, Victor C.: Pennsylvania Med. Jour., November, 1913.
3. Seidell, A., and Fenger, F.: Seasonal Variation in the Iodine Content of the Thyroid Gland, Jour. Biol. Chem., 1913, xiii, 517. The Iodin Content of the Thyroid Gland, editorial, THE JOURNAL A. M. A., March 29, 1913, p. 1000.
4. Compare Guyer, R. G.: Pharm. Jour., 1913, xci, 123. Martin, N. H.: Ibid., p. 126.

Current Comment

HEALTH IN OUR ARMY

The Report of the Surgeon-General of the Army for 1914 is a document of unusual interest. The outline of the report in the letter of transmissal states that the non-effective rate for disease for 1913 (the calendar year covered by the report) is 23.97 a thousand, the lowest rate ever recorded for our army. This rate indicates the average number of men in every thousand incapacitated for duty each day during the year. The death rate for disease was 2.57, the total number of deaths being 397, 40 of which were from tuberculosis, 23 from pneumonia, 17 from nephritis and 15 from organic heart disease. Probably the most interesting portion of the report is that dealing with the control of preventable diseases. The record made in our army in the obliteration of typhoid fever has become a subject of world-wide comment among military and sanitary authorities. Only three cases of typhoid fever occurred in the army during 1913; two were in recently enlisted recruits who were admitted to the hospital with the disease inside of the first six days of service, while in the third case, only partial immunity through vaccination had been established. All three of these patients recovered. By way of contrast, the report states that in 1912, there were 18 cases with 3 deaths; in 1911, 44 cases with 6 deaths; in 1910, 142 cases and 10 deaths, and in 1909, 173 cases with 16

deaths. Among all the troops scattered along the Mexican border and in large camps in Texas, not a single case of typhoid has occurred in an inoculated man since June 4, 1912. This means that typhoid fever as a military disease, as an accompaniment of military service and camp life, is practically a thing of the past. Only those familiar with the awful ravages of this disease in all previous wars under all conditions in which large numbers of men were herded together under unfavorable conditions can appreciate the enormous economic and military value of this fact. The report is full of interesting data, so numerous as to make it possible to refer only to the most interesting. The medical department of the army, June 30, 1914, consisted of 426 medical officers, 91 reserve officers, 16 contract surgeons, 28 commission dental surgeons, and 39 contract dental surgeons. The remainder of the 5,044 persons connected with the department were army nurses and members of the hospital corps. Of the 19 candidates who had passed the preliminary examination for appointment to the medical corps, 17 successfully completed the course of instruction in the army medical school and 16 were recommended for commissions. The library of the Surgeon-General's office contained on June 30, 1914, 219,494 volumes and 330,320 pamphlets on medical and surgical subjects. The army medical museum contains 47,120 specimens. Reports from the various hospitals, laboratories, territories and provinces are all of great interest and impress the reader with the wide range and scientific thoroughness of the work done by our army medical corps.

PRACTICAL PHARMACOLOGY

The simplification of our materia medica, as represented in the lists of remedies in New and Nonofficial Remedies and in Useful Drugs, has made possible the adoption of rational therapeutic measures by those who are convinced of the inefficiency of methods heretofore in vogue. The brief descriptions in these works do very well for those who are already familiar with the actions of the drugs listed, but are not sufficient for a completely intelligent and discriminating use of such drugs. This knowledge the practitioner is assumed to have obtained in courses of pharmacology in the medical school. However, pharmacology has made such great strides that the teachings of fifteen years ago would be rather unreliable to-day as regards many subjects. Moreover, the subject is so full of details, that attendance on a single course of lectures results usually only in general impressions and not in a real working knowledge. The general practitioner is often accused of ignorance of pharmacology, but in general we believe that such ignorance is due to sheer inability to keep up with the advances in general medical knowledge. There is reason to believe that need of this knowledge is widely felt and is becoming ever more acute as the profession is getting away from the old-time ready-made prescriptions. Whether these were proprietary or merely "Favorite Formulas" they did not demand an intimate knowledge of drug actions. Where there were so many shots in the blunderbuss, it seemed rather immaterial to know just where they would hit. However, with the progress of medicine, it has become pretty clear that the disease was rarely hit by such scattering shots, whatever else they might destroy. The profession is quite well convinced of the failure of the various "compounds," and is ready to try a more direct marksmanship. Before it can do this successfully it must have a more accurate knowledge of its weapons, the drugs. It is true again that this knowledge may be obtained from the various text-books on pharmacology. However, none of these is written precisely for the practitioner who is contemplating turning over a new leaf. Again, many men, with the very best intentions, find it difficult to read a text-book from cover to cover, but would follow with interest a serial presentation of the subject. It is in response to this demand that THE JOURNAL is presenting in serial form[1] an outline of the facts of modern pharmacology prepared especially for the practitioner, giving the important elementary facts which the doctor needs to understand regarding the use of drugs; written from the standpoint of its special audience; not assuming too much familiarity with modern discoveries in the allied sciences, but counting on a more practical knowledge of disease than is customary in the ordinary text-books which are intended primarily for students.

THE ADVERTISING POLICY OF THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES

The *American Journal of the Medical Sciences* is, with one exception, the oldest medical journal in the United States. For nearly ninety years it has recorded the progress made in medicine, not only in this country, but also abroad. Few journals in the United States have for so long held such a high place in the regard of the best men in our profession. No journal has presented in its reading pages material of a higher grade of scientific excellence. In this respect it has been a star of the first magnitude in the medical literature in America. With one exception it has always stood for the highest ideals in medicine. This exception has been its advertising pages. While these have not at any time been of such character as to deserve serious condemnation, at the same time they have been used to promote preparations that were not creditable to American medicine. This, undoubtedly, was due largely to a theory, not only in medical but also in lay journalism, that there is a separation of the literary pages from the advertising section that absolves the editor from all responsibility for the latter. Now even this exception is removed; for, while no regular announcement has been made in the journal itself, we understand that hereafter no advertisements of proprietary medicines will be admitted to its pages that have not the approval of the editor. The publishers of the *American Journal of the Medical Sciences* are to be congratulated on the advanced stand they have taken; it means much to scientific medicine to have this journal aid in the efforts that are being made for more rational therapeutics in this country.

1. Practical Pharmacology, this issue, p. 147.

CORONER REFORM IN NEW YORK

June 13, 1914, at the request of the New York City Club, Mayor John P. Mitchell ordered an investigation of the coroners' office of that city. The report[1] has just been made public. As was expected by many, the management and methods of the coroners' offices were found to be open to grave criticism, while the entire system of elective coroners is shown clearly to be expensive and inefficient. The report states that the elective coroner in New York City represents a combination of power, obscurity and irresponsibility which has resulted in inefficiency and malfeasance, that under the present system, the honest and efficient performance of the important public duties entrusted to the coroner are practically impossible. Of the sixty-five coroners in New York City since consolidation, not one, according to the report, was qualified for the position, most of the candidates being selected "to balance the ticket and for purely political reasons," many of them being absurdly ignorant of the scientific and legal aspects of their work. Most of the coroners' physicians have also been appointed for political reasons, "have been drawn from the ranks of medical mediocrity," and their medical examinations and official reports are without scientific or legal value. Lack of supervision has favored graft and extortion. "Far from being of assistance," says the investigator, "the death certificates of coroners' physicians introduced a large degree of error into the vital statistics of the city." An analysis of 800 inquisition papers shows in 40 per cent. complete lack of evidence to justify the certified cause of death. Incompetent medical work of the coroners' physicians deprives the community of an absolutely necessary deterrent to crime. Numerous homicides have failed of detection for this reason. Infanticide, poisoning and criminal abortion, according to the report, can be carried on almost with impunity. The system of coroners' juries makes the administration of justice in the Coroners' Court a scandal and farce. They can be and are easily packed, they offer a ready means of petty extortion, and their verdicts are of no legal value. The records of the coroners' office are meager, uninforming and practically valueless. Coroners have compelled the employment of favorite undertakers, have injured the rights of deceased workmen, and have helped corporations to escape from liability for workmen's deaths. The report also states that the coroners' office is overmanned with unnecessary employees at salaries grossly in excess of the value of their services. The present coroners' system costs the city of New York over $172,000 a year. It is distinctly branded by the report as a public scandal and disgrace which should be abolished immediately. A system of medical examination, similar to the plan now in operation in Massachusetts, is proposed. Skilled and experienced pathologists appointed by the mayor as the result of competitive examination will, it is estimated, save the city at least $50,000 a year, will terminate the present ignorant inefficiency and corrupt performance of the elective coroners' functions, and for the first time in the history of New York City will utilize the facts of legal medicine for the protection of the community. The scathing statement of facts in the report, as shown by the summary above, places before the New York General Assembly the definite responsibility for present conditions and future improvement. The historic office of coroner has long since ceased to be of value for performing its original functions and has never, with occasional exceptions, been developed to its full possibilities. The adoption of this reform in New York should be an example to all of our other large cities to investigate the work of the coroners' office in their own city and to institute immediate measures for better methods. It is true that conditions in all large cities are not as bad as in New York, but this is due to the accidental fact that a competent man has been elected coroner, rather than to any merit in the system.

1. Wallstein, L. M.: Report on Special Examination of the Accounts and Methods of the Office of Coroner in the City of New York, 1915.

HARPER'S WEEKLY ENTERS THE LISTS

Many of our readers will remember the exposé by George Creel of the C. H. Carson fraud operated from Kansas City, Missouri. Carson was a quack who fleeced his victims by selling them tissue paper supposed to be "magnetized" and by dispensing "vital force" in the form of petrolatum containing red pepper. In the January 2 issue of *Harper's Weekly*, Mr. Creel commenced a series that bids fair to arouse wide interest. The first article was a general introduction to the subject. In the present issue of *Harper's* (January 9) Mr. Creel gets down to specific cases. Under the head of "Suffering Women" he takes up such nostrums as Wine of Cardui, Viavi, and Chichester Pills, the Cora B. Miller mail-order concern, the Fort Wayne fakeries —now fortunately out of existence—and Harriet M. Richards or the Woman's Mutual Benefit Company. Altogether times seem to be looking dark for the exploiter of proprietary frauds. Movements like these instituted by high class publications such as *Harper's Weekly* do much to indicate a change in public opinion on the subject of fraudulent proprietary remedies.

The Requisites of the Modern Doctor.—To achieve the greatest success in his practice, the modern doctor must be a man possessed of logical mind, medical skill and moral courage. He must not only be able to recognize the early signs and symptoms of diseased conditions, and to draw correct conclusions therefrom, but must also have the courage to tell his patients of his findings truthfully and fearlessly. . . . On the other hand the doctor of to-day owes a duty to the state. . . . By reporting promptly all cases of communicable disease that come under his notice, the doctor lends a valuable service not only to the community but also to his individual family. A man who allows cases of diphtheria to go without treatment until they are moribund, who refuses or fails to recognize tuberculosis until the lungs are filled with râles and the sputum with tubercle bacilli, or who neglects cases of cancer until they are inoperable, or at least beyond recovery from operation, has no place in the modern practice of medicine. The people are demanding better things and they are entitled to more consideration; on the other hand men who are prepared to practice modern medicine need have no fear that there is no demand for such service.—Guy L. Kiefer, *Journal Michigan State Medical Society*, October, 1914.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ILLINOIS

Sanatorium Site Purchased.—The city commissioner of Rock Island has purchased a site for a municipal tuberculosis sanatorium at Seventeenth Street and Brashar. The site consists of 4.33 acres for which $4.500 was paid. The medical commission, in charge of the plan for the proposed institution, consists of Drs. Joseph De Silva, Louis Ostrom, Jr., and Bernard J. Lachner.

Chicago

Work of the Iroquois Hospital.—During the last year 17,437 emergency cases were cared for at the Iroquois Emergency Memorial Hospital, nearly 7,000 more than in the previous year.——At the eleventh annual services of the Iroquois Memorial Association, held December 30, Health Commissioner George B. Young, Dr. Patrick Machler and Dr. Clara P. Seippel were the principal speakers.

Psycopathic Hospital Report.—Dr. Haim I. Davis reports that during 1914, 2,807 patients were received at the hospital of whom 1,677 were men and 1,130 women. The patients were distributed as follows: Chicago State Hospital, Dunning, 1,177; Elgin State Hospital, 397; Kankakee State Hospital, 516; Watertown State Hospital, 7; Peoria State Hospital, Bartonville, 29; Jacksonville State Hospital, 1; discharged cured, 633; transferred to County Hospital, 2; died, 36.

Hospital Staff Selected.—President Reinberg of the Board of County Commissioners of Cook County has nominated the following staff of consulting physicians and the nominations have been approved by the county board: Drs. Arthur D. Bevan, Frank Billings, Charles P. Caldwell, James A. Clark, Alfred C. Cotton, Arthur R. Edwards, William A. Evans, Edward A. Fischkin, Burton Haseltine, James B. Herrick, Albrecht Heym, Anton A. H. Holmboe, Charles E. Kahlke, Jacob S. Kauffman, Blue Island, Franklin H. Martin, Mary G. McEwen, John B. Murphy, Albert J. Ochsner, John R. Pennington, Stephen R. Pietrowicz, William E. Quine, John A. Robison, Otto L. Schmidt, Daniel A. K. Steele, Daniel P. Teter, Camillo Volini, Charles J. Whalen and George B. Young.

INDIANA

Medical Dispensary at Muncie.—A free medical dispensary at Muncie was opened December 19.

Personal.—Drs. William N. Wishard, John F. Barnhill and John H. Oliver have resigned from the staff of the Indianapolis City Hospital.——Dr. Francis M. Magers, Churubusco, is under treatment at St. Joseph's Hospital, Fort Wayne.

MASSACHUSETTS

State Health Council Sworn In.—The oath of office was administered December 12, to the State Advisory Health Council.

Hospital Site Purchased.—The State Board of Insanity has purchased a site containing 281½ acres north of Trapelo Road, Waltham, for $68,500, on which to establish the new Metropolitan Insane Hospital.

Medical Lectures.—In accordance with its usual custom the Faculty of Harvard Medical University is giving its course of free medical lectures at Harvard Medical School on Sunday afternoons, from January 3 to May 9.

Personal.—Dr. Frederick C. Brigham, Springfield, was stabbed in the abdomen by an unknown assailant, December 25, and is said to be in a critical condition.——Dr. Sylvester E. Ryan, Springfield, has been appointed associate medical examiner of Hampden County, vice Dr. Theodore S. Baco, Springfield, resigned.——Dr. William J. Delehanty, Worcester, has been appointed a member of the board of trustees of the Worcester State Hospital, succeeding Dr. Samuel B. Woodward, resigned.——Dr. Francis W. Anthony, Haverhill, has been elected president of the Massachusetts Society of Examining Physicians and Surgeons.——Dr. Frederick L. Bogan, Boston, has been elected a member of the school committee.——Major Robert W. Forster, Lawrence, has resigned from the medical corps of the National Guard.

NEVADA

Hygienic Laboratory Announcement.—The State Hygienic Laboratory of the University of Nevada at Reno, announces its readiness to perform the complement fixation test for syphilis on Thursday of each week. The test is offered to the people of the state through their physicians free of charge. Specimens received at the laboratory later than Thursday noon will not be examined until the following Thursday.——The laboratory offers bacteriologic and biochemical examinations and analyses for the diagnosis of communicable diseases, and also assistance in the prevention and control of communicable diseases within the state.

NEW YORK

Personal.—Dr. John H. Cotter has resigned as a member of the Poughkeepsie Board of Health.——Dr. William C. Wood, president of the Gloversville Board of Health for ten years, has resigned.

Health Movies.—The motion pictures prepared by the State Health Department for the Panama Pacific Exposition were exhibited December 16 in Albany, and will be shown throughout the state before they are taken to California. The first series illustrates Infant Welfare and the second the Evils of Insanitary Surroundings.

New York City

New Morgue Opened.—The new morgue in connection with Bellevue, which is in the basement of the Pathological Building at First Avenue and Twenty-Ninth Street, was opened recently, and 150 bodies were removed from the old morgue. The new morgue is to be known as the mortuary and has greatly improved arrangements for the identification of bodies.

Personal.—Dr. Arnold Sturmdorf has been elected president of the New York Physicians' Association for the coming year.——Dr. A. H. Page of Kings County Children's Hospital, Brooklyn, was operated on for appendicitis, December 25, and is reported to be doing well.——Drs. Mabel Palliser of Brooklyn and Edith Bertine have been appointed interns to Bellevue Hospital. There are now five women on the staff at Bellevue.

Quadricentenary of the Birth of Vesalius.—A meeting in commemoration of the four hundredth birthday anniversary of Vesalius was held at the New York Academy of Medicine, January 7, at which Dr. William H. Welch, Baltimore, delivered an address on "Vesalius and the Spirit of the Time"; Dr. Fielding H. Garrison, editor of the *Index Medicus*, spoke on "Anatomical Illustration Before and After Vesalius," and Dr. Harvey Cushing of Harvard Medical School delivered a lecture on "The Portraits of Vesalius," illustrated by lantern slides. In connection with this meeting there was a public exhibition of early editions of the works and plates of Vesalius and of the anatomists and surgeons of his time. This exhibition was open from January 5 to 9, inclusive.

Patent Medicines Controlled by Sanitary Code.—At its meeting, December 31, the Board of Health adopted a completely revised sanitary code, which has twenty-three new sections. The most important of these regulates the sale of patent medicines and requires that the names of every ingredient used in preparations of this class shall be registered with the Department of Health. This regulation goes into effect on Dec. 31, 1915. This ordinance was passed in the face of very strong opposition on the part of interested parties, and its passage was largely due to the strenuous efforts of Dr. Sigismund S. Goldwater. This article further states that any proprietary medicine shall be deemed misbranded if it does not contain all the ingredients as filed with the Health Department, or if it contains more than the ingredients as filed. Other sections of the code require that coroners must notify the Health Department of the death of any person immediately after they receive such information; that in the manufacturing, handling and sorting of cigars and cigarettes no person engaged in such work shall at any time touch with lips, teeth or tongue any cigar, cigarette or tobacco to be offered for sale; that no person with tuberculosis or other contagious disease can be employed as a teacher in a public or private school without permission from the Health Department, nor shall such persons be permitted to manufacture or alter garments in tenements unless the article is for the use of the person making it, nor shall such a person be permitted to work where food and drink are prepared or sold, and all workers in such places shall be prepared to submit to a physical examination by the department. A number of other minor changes have been made in the code

which will greatly add to efficiency of the public health administration.

NORTH CAROLINA

Commercial Travelers' Room Opened.—A new room in the Presbyterian Hospital, Charlotte, furnished and outfitted by the Travelers' Protective Association and the United Commercial Travelers, has been opened and is now ready for use. It is known as "The Drummer."

Personal.—Dr. James A. Anderson, McAdenville, has removed to Charlotte.——Dr. Francis J. Clemenger, Asheville, has returned after two years' laboratory work in England.——Dr. W. R. Brandon, after eighteen months' hospital service in Baltimore, has located at Midway.——Dr. Benjamin E. Washburn, Rocky Mount, has resigned as health officer of Nash County to accept a position with the Rockefeller Foundation.

Instruction of Health Officers.—The State Board of Health proposes to conduct in the executive offices and the various other working departments, including actual work in the field with some of the best of the whole-time county health officers, a school, or course of instruction covering a period of some six to seven months for the instruction of physicians proposing to become county or municipal health officers in the state. The tentative course as outlined by the secretary of the board, Dr. Watson S. Rankin, Raleigh, is as follows: Four weeks in the executive offices where fundamentals as well as details will be studied; four weeks in vital statistics, followed by three weeks in a study of popular sanitary instruction; four weeks at the State Tuberculosis Sanatorium; four weeks in the Hygienic Laboratory, concluding with six weeks of actual work under a field worker in county health work. At the close of the period of instruction, if the work has been performed satisfactorily, a certificate signed by the governor of the state and the officials of the board will be awarded. In this way it is hoped to be able to offer counties and municipalities medical men who at once will be able to engage in active practical public health work without having to find out many things by experience. This will also tend to standardize the county and municipal health work throughout the state.

PENNSYLVANIA

Quarantine Lifted.—The State Live Stock and Sanitation Board on December 30 issued a notice of modification for the foot-and-mouth quarantine, relieving Philadelphia and Juniata counties from all restrictions and reducing the area in all of the other counties under quarantine except Berks, Lehigh, York, Lancaster and Lebanon. Pittsburgh and the townships near it are retained in quarantine. The ban on hunting because of the danger of spreading the disease was raised.

Not a Passenger Killed on the Pennsylvania System.—Not a passenger out of 188,411,876 carried on all the lines of the Pennsylvania Railroad system last year was killed. The Pennsylvania Railroad lines east of Pittsburgh in the past two years carried 311,675,794 passengers and not one of them was killed in an accident to a train. In four of the past seven years, 1908, 1910, 1913 and 1914, more than 558,000,000 passengers—five times the population of this country—were carried by the Pennsylvania lines east of Pittsburgh without a single one being killed in a train accident.

Personal.—Dr. Henson F. Tomb, Johnstown, who was operated on at the Memorial Hospital in that city recently, is reported to be improving.——Dr. Jerry C. Murphy, York-Haven, is reported to be seriously ill with pneumonia at his home.——Dr. Gregg A. Dillinger, Pittsburgh, who was stabbed by an unknown assailant at the door of his home December 18, is improving, but is not out of danger.——A banquet was given at the University Club, Pittsburgh, December 19, by the active staff of the West Penn Hospital in honor of Dr. James W. Macfarlane, who after thirty-seven years of service on the active staff of the hospital, has retired and been made a member of the consulting staff. Dr. Macfarlane was presented with a silver loving-cup.——Dr. Harry W. Bernhardy, Rochester, was given a birthday surprise party by the physicians of Beaver Valley, at which he was presented with a gold watch chain.

Philadelphia

Appropriation for Unemployed.—On December 10 Councils, with only one dissenting vote, made an appropriation of $50,000 for the relief of the unemployed of the city. This appropriation is to be expended by the departments of health and charities from the Emergency Aid Committee.

To Raise Funds for Woman's College.—At a recent meeting of the alumnae of the Woman's Medical College of Pennsylvania and others interested in the institution, an organization was effected for the purpose of planning ways and means for raising money for the college. The meeting was called by the graduate council December 13.

Personal.—Dr. Charles W. Burr has been appointed consulting neurologist and Dr. P. B. McCullough consulting dentist at the Municipal Hospital.——Dr. James William White has just published a pamphlet entitled "A Primer of the War for Americans," in which he discusses the cause of the war from the pro-allies' point of view.

Presbyterian Hospital to Replace Present Buildings.—To provide for the future needs of the Presbyterian Hospital, the board of trustees of that institution has decided to replace the present structures at Thirty-Ninth and Filbert Streets with a new group of buildings in the Georgian style of architecture. It is proposed to build seven structures, the cost of which will exceed $1,000,000. The plans are in charge of the building committee, which has chosen John T. Windrim architect to prepare plans.

Fund for Paris War Hospital.—At the meeting of the committee on the Philadelphia Ward in the American Ambulance Hospital, held December 15, in the Franklin Building, Dr. James William White, chairman of the committee, reported that the fund had reached the sum of $7,024.98. An executive committee was appointed, consisting of John Wanamaker III, Charlton Yarnall, Dr. George E. de Schweinitz, William Ellis Scull, Dr. Robert G. LeConte, Dr. James William White, Effingham B. Morris and John J. Collier.

Hospitals Need Money.—Many Philadelphia hospitals will have to curtail the extent of their work unless they soon get money in the shape of private contributions. These institutions are caught between the increase of charity patients and an increase in the cost of supplies due to unemployment, and to a decrease in contributions due to the financial depression and the plea for charity in unusual cases. The Episcopal Hospital, long considered one of the strongest institutions in the city, has been forced to cut down its limit of ward patients from a flexible point somewhere above 400 to a maximum of 275. The number of patients, however, who come to the hospital for day treatment has not been limited. ——Other hospitals which may have to cut down the number of ward patients are the Pennsylvania, the Woman's College Hospital, Samaritan, St. Christopher's and St. Timothy's.

SOUTH CAROLINA

New Hospital for Negroes at Columbia.—On December 1 a hospital for negroes was opened at Columbia by Dr. Matilda A. Evans of that city.

Donation for Indigent Baptists.—The Baptist State Convention, at a recent meeting, agreed to donate $6,000 during the year for the care of indigent patients in the Baptist State Hospital, Columbia.

Appeal for Pellagra Hospital.—Dr. James L. Jefferies, representing the Spartanburg County Society and the Spartanburg Health League, appeared before the county grand jury, November 28, to prevent an appeal for an increased appropriation for the maintenance of the pellagra hospital at the county home, from $4,000 to $6,000.

Health Day in Schools.—Greenville County has designated Friday, December 11, as a day for the study of public health in the schools. The day is to be devoted to cleaning and making sanitary the schools and their surroundings, reading compositions by the children on public health topics and talks by physicians on public and personal hygiene.

State Society Meeting.—The Medical Society of South Carolina celebrated its one hundred and twenty-fifth annual meeting, December 14, at Charleston and the following officers were elected: president, Dr. Edward F. Parker; vice-president, Dr. Robert Wilson, Jr.; secretary, Dr. Albert Nathan, and treasurer, Dr. Daniel L. Maguire, all of Charleston.

SOUTH DAKOTA

Personal.—Dr. Harry C. Durkee, Gettysburg, has been appointed physician to the Cherry Creek Indians, with headquarters at Faith.——Dr. Andreas A. Wipf, Freeman, is reported to be under treatment in a hospital in Yankton, as the result of an automobile accident near Yankton.

State Board Advocates Preventive Service.—The report of the State Board of Health asks for better financial provisions

for its work in the state and states its conviction that its efforts will be more effective if devoted to preventive rather than curative measures in its attempt to control contagious, communicable and occupational diseases. The board also advocates that the state supply diphtheria antitoxin at the cost of production.

TENNESSEE

Personal.—Dr. William E. Martin, Columbia, suffered a loss of $10,000 by fire, December 10.——Dr. John A. Price, Nashville, has been appointed physician to the state penitentiary, vice Dr. Z. D. Massey, Sevierville, resigned.

Middle Tennessee Physicians Hold Meeting.—At a meeting of the Middle Tennessee Medical Association held at Murfreesboro, November 19 and 20, the following officers were elected: president, Dr. Oval N. Bryan, Nashville; vice-president, Dr. Frank B. Reagor, Shelbyville, and secretary-treasurer, Dr. Roy W. Billington. Lebanon was selected as the next place of meeting.

Work of the Rockefeller Sanitary Commission in Tennessee to be Continued Temporarily by the International Health Commission.—With the passing out of existence of the Rockefeller Sanitary Commission on Jan. 1, 1915, the Tennessee State Board of Health has faced the necessity of discontinuing the hookworm campaign initiated by the commission. The hookworm campaign has made a deep impression and aroused great public interest. Surveys have been conducted in over sixty counties, and dispensaries have been operated in forty-four of these. There are a number of counties, however, in which dispensaries should be operated. The International Health Commission has therefore agreed to carry on the work of the Rockefeller Sanitary Commission temporarily in the state. It is expected that this will permit continuance of the work to July 1, 1915, by which time it is hoped that means will be found for its further continuance as necessary.

TEXAS

City Hospital Opened.—The Municipal Hospital, Austin, was opened to receive patients January 1.

North Texas Physicians Hold Meeting.—The North Texas Medical Association held its seventieth semi-annual session at Dallas, December 8 to 10, and elected the following officers: president, Dr. Raleigh W. Baird, Dallas; vice-president, Dr. Murphy M. Morrison, Denison; secretary, Dr. Hugh Leslie Moore, Dallas; treasurer, Dr. Charles R. Johnson, Gainesville.

Abolition of Quarantine Officers.—The State Board of Health at its final meeting, December 9, recommended the abolition of quarantine officers along the Rio Grande border and their employment as state inspectors and also recommended that the salary of the state health officer be increased from $2,500 to $4,000 a year and that he be required to devote his entire time to the duties of his office.

Personal.—Dr. Carrie Weaver Smith, Dallas, has been appointed a member of the committee to arrange the sociologic exhibit at the Panama-Pacific Exposition, and has gone to New York for conference with the national committee.——Dr. John B. Thomas, Midland, sustained a loss by fire of $3,500 December 19.——Dr. William M. Brumby, San Antonio, has succeeded the late Dr. John M. McCutchan, Waco, as assistant medical director of the Amicable Life Insurance Company.——Fire at Granbury, December 18, caused a loss of $600 to Dr. A. R. Jarrett.——Dr. Luther F. Johnson has been appointed full-time medical inspector for the city schools of Beaumont.

VIRGINIA

Personal.—Dr. John Mann, Richmond, has started for Europe, where he will work in the Russian Red Cross.——Dr. Edward A. Gorman has been elected health officer of Alexandria to succeed himself.——Dr. W. B. Ashburn, South Norfolk, who has been ill with septicemia for four months, is convalescent and has resumed practice.

Honor Deposed Hospital Head.—Physicians of Richmond and their wives were the hosts at a banquet given at the Arlington Hotel, December 18, in honor of Miss Marsh, superintendent of the Reid Memorial Hospital, and her assistant, Miss Sands, who were recently deposed, notwithstanding the protests of the majority of physicians of the city.

CANADA

Begins Sanitary Bulletin.—The Quebec Municipal Board of Hygiene and Statistics has commenced the publication of a sanitary bulletin. It will be issued monthly and will contain articles in English and French.

Hospital News.—The new St. Justine Hospital for Children has been formally opened in Montreal. It contains 180 beds.——The Children's Hospital, Toronto, has been enlarged by the addition of a new wing providing accommodation for fifty-two more patients.

Medical Reciprocity.—The Ontario Medical Council, at its meeting December 2, expressed its approval of the principles of reciprocity between Ontario and Great Britain. The matter was finally referred by the countil to a subcommittee, which was directed to bring in a report at the next meeting after ascertaining what the British Medical Association is ready to offer.

Free Medical Care for Toronto Citizens.—At a meeting of the Toronto Board of Health, December 16, and on suggestion of Dr. Charles J. C. O. Hastings, Toronto, medical officer of health, it was decided to furnish free medical advice to citizens who cannot afford to call in a physician, and the medical officer of health was authorized to employ a physician to attend to these cases.

Personal.—Dr. Cecil S. Mahood, medical officer of health, Calgary, Alberta, has been elected a Fellow of the Royal Institute of Public Health, London, England.——Dr. Arthur E. Ross, M.P.P., Kingston, is in charge of No. 1 Field Ambulance at Salisbury Plain, England. He has with him six recent graduates of Queen's Medical Faculty and three medical students of the fourth year. There are also three other Queen's graduates in the medical service and one in the navy.——Lieut.-Col. Herbert S. Birkett, M.D., dean of the medical faculty of McGill University, Montreal, is to be in command of the general hospital offered by McGill University for service in France. The personnel will consist of twenty-one officers, who must be members of the medical faculty of McGill, 100 men in the rank and file who will be drawn from the medical student body of all years. Prof. John George Adami and Dr. John M. Elder may go with this unit.——Dr. Arthur Mignault, Montreal, has been raised to the rank of lieutenant colonel in the army medical corps.——Dr. James McGregor, who for some time practiced in Megantic, Quebec, but who has recently been connected with the Presbyterian Hospital, New York, has been appointed surgeon with the European contingent on the American ambulance staff.——Dr. Charles J. Edgar, North Hatley, Quebec, has been appointed a surgeon in the military hospital at Netley, England.——Dr. George C. Hale, London, has been commissioned as medical officer of the Eighteenth Battalion for overseas service with the Second Contingent, and has been assigned to duty as medical officer at Queen's Park encampment, succeeding Major Archibald V. Becher, London, appointed sanitary officer of the camp.——Dr. James Samson, Windsor, announces that he will soon retire from practice and will engage in consultation work in Detroit.

GENERAL

Tri-State Society Meeting.—The Northern Tri-State Medical Association of Indiana, Ohio and Michigan announces that it will hold its forty-first semi-annual meeting in Elkhart, Ind., January 12.

New Officers.—At the annual meeting of the Porto Rican Medical Association held at San Juan, the following officers were elected: president, Dr. Pedro Gutiérrez Igaravidez, San Juan; vice-president, Dr. M. de la Pila Iglesias, Ponce; secretary, Dr. José S. Belaval, San Juan; and treasurer, Dr. Jacinto Avilés, San Juan.

Western Surgeons Hold Meeting.—The twenty-fourth annual meeting of the Western Surgical Association was held in Denver, December 18 and 19, under the presidency of Dr. Byron B. Davis, Omaha, Neb.; and the following officers were elected: president, Dr. Joseph Rilus Eastman, Indianapolis; vice-president, Dr. Van Buren Knott, Sioux City, Ia.; and secretary, Dr. Arthur T. Mann, Minneapolis (reelected). The 1915 meeting will be held in Des Moines, Ia.

A Warning.—THE JOURNAL is informed that a man, purporting to represent the Keystone Mfg. Co., Pittsburgh, appeared in Lima, Ohio, and sold to physicians such apparatus as hypodermic syringes, stethoscopes, thermometers, etc. He made collections in advance, allowing an extra percentage for cash with the order. Several physicians were victimized, as no goods were ever shipped and letters sent to the firm were returned unclaimed. Physicians should be wary of all offers of this character.

Southern Surgeons and Gynecologists Meet.—The twenty-seventh annual session of the Southern Surgical and Gynecological Association was held at Asheville, N. C., December 15 to 17, under the presidency of Dr. John Wesley Long, Greensboro, N. C. Cincinnati was selected as the next place

of meeting and the following officers were elected: president, Dr. Bacon Saunders, Fort Worth, Texas; vice-presidents, Drs. Thomas S. Cullen, Baltimore, and Samuel M. D. Clark, New Orleans; secretary, Dr. William D. Haggard, Nashville, and treasurer, Dr. Le Grand Guerry, Columbia, S. C.

Hospital Ship for Fishing Fleet.—The U. S. Revenue Cutter *Androscoggin*, which has been transferred into a hospital ship for fishermen, has arrived at Baltimore ready for service. She will take on fuel and supplies sufficient for a two months' cruise, and will make a stop at Gloucester, Mass., where her commander will confer with the owners of the fishing fleet. From Gloucester the *Androscoggin* will cruise around Brown's Bank and the south shore of Nova Scotia, and will be prepared to receive for treatment fishermen incapacitated from illness or injury. Late in February the *Androscoggin* will return to Boston and outfit for a second cruise to Banquereau and Sable Island banks.

Bequests and Donations.—The following bequests and donations have recently been announced:

Home for Aged and Infirm Hebrews, New York, $1,000, and the residuary estate valued at about $30,000, to be divided among charitable institutions, principally the Home for the Blind, by the will of Esther Wyman.

Visiting Nurse's Association of Chicago, $5,000; Children's Memorial Hospital, $2,500 after a lapse of ten years, by the will of George H. Hale, Chicago.

Chester County, Pa., Hospital, $71,376.85 by the will of Townsend S. Lamborn of West Bradford Township, Chester County.

Montefiore Home, New York City, $2,500, by the will of Albert Rich.

Subscription for the hospital Saturday and Sunday Association, $17,935, up to January 1.

Examination for Physicians for Indian Service.—The United State Civil Service Commission announces an open competitive examination for physicians, men only, to be held on February 3, at various places throughout the United States, to fill a vacancy in the Indian service at the Haywood School, Wisconsin, carrying a salary of $1,100 a year. Unmarried eligibles without dependents are desired; applicants must be graduates or senior students in recognized medical schools, between 21 and 40 years of age, and citizens of the United States. Those who desire to take this examination should apply for Form 1412 stating the title of the examination for which the form is desired, to the United States Civil Service Commission, Washington, D. C., or the Secretary of the United States Civil Service Board, at any of the places at which the examination will be held.

Biologists Meet in St. Louis.—The American Association of Anatomists and the Federation of American Societies for Experimental Biology, comprising the American Physiological Society, the American Society of Biological Chemists, the American Society for Pharmacology and Experimental Therapeutics and the American Society for Experimental Pathology, held their annual meetings in St. Louis December 28-30 as the guests of the Washington University Medical School. The scientific program contained about 180 titles. Addresses were delivered in memory of Drs. S. Weir Mitchell and Charles S. Minot. On Wednesday afternoon an excursion of the city was made in automobiles. Stops long enough to permit of tours of inspection were made at the Washington University and at the affiliated hospitals, the Barnes and St. Louis Children's. About 200 visitors were in attendance. Perhaps the most important business transacted during the session was in relation to the business conduct of the *American Journal of Physiology*. This journal, which since 1898, has been edited by Dr. William T. Porter, becomes by virtue of action taken at this meeting the official organ of the American Physiological Society, by which it is owned and managed. The management of the journal is now vested in the council of the society, which has been so reorganized as to insure for the journal the stability of policy that is essential to its successful publication.

FOREIGN

Switzerland Quarantines Against Cholera.—The *Policlinico* states that Switzerland has officially declared a quarantine against Russia, Austria, Servia and Galicia on account of the prevalence of cholera in these countries.

Spanish Academy of Medicine Elects a Senator.—It is one of the privileges of the Spanish Academia de Medicina that it is entitled to a seat in the senate. The member of the academy recently elected senator in this way is Dr. B. G. Alvarez, one of the editors of the *Pediatria Español*, the official organ of the Sociedad de Pediatria de Madrid.

Another International Prize Postponed on Account of the War.—The Umberto I prize offered by the Istituto Rizzoli will not be awarded this year and the date limit for sending in articles in competition has been postponed to Dec. 31, 1915, instead of 1914. This prize of $700 is awarded by the Provincial Council of Bologna for the best work or invention in the line of orthopedics.

Sanitary Brigade Organized at Madrid.—The first flying sanitary brigade in Spain has just been organized at Madrid and the occasion was celebrated by a *té de honor* in the Palace Hotel tendered by the Bloque Sanitario Español to the governor, all the alcaldes, public health officers and other officials of the province of Madrid. The brigade is intended to bring to bear at once all the measures known to science to aid the local public health authorities in case of an epidemic or catastrophe of any kind at any point in the province. The autotrucks of the brigade are equipped with sterilizing plants, services for vaccination, serotherapy, etc. Dr. Call, medical inspector for the province, is in charge.

WAR NOTES

Aid for Blinded Soldiers.—An endowment fund to aid soldiers who have lost their eyesight from wounds in the war has been started by Frau Minden, who has given the Berlin city authorities 100,000 marks ($25,000) for the purpose.

Cholera in Austria.—The *Wiener klinische Wochenschrift* reports 844 cases of cholera with 331 deaths in Austria during the week ended November 7; including 90 cases in Vienna with 10 deaths. During the following week there were 78 cases in Vienna with 19 deaths.

Olympic Games Building as Hospital.—It is stated in a British medical journal that twenty-five emergency hospitals have been established in Berlin, with accommodations for 20,000 men. One of the larger hospitals is housed in the new buildings erected for use in connection with the Olympic games.

Red Cross Festschrift.—In honor of its silver jubilee, the German Red Cross has issued a stately volume, profusely illustrated, containing the reports and experiences of the physicians who have been at the head of the various expeditions sent out by the Red Cross during the latest campaigns. J. Springer, Berlin, is the publisher and the price is to be 40 or 42.50 marks (about $10 or $10.50).

Automobile Ambulance Corps.—The Australian Expeditionary Force, which has gone to join the allies in Europe, is accompanied by an ambulance corps equipped with a special field ambulance, provided with all apparatus and appliances necessary for all kinds of military surgery, including a Roentgen-ray apparatus. The sides of the car are so constructed as to carry tentage sufficient for a field hospital.

Personal.—Major William J. Crookston, Pittsburgh, M.C., N.G., Pa., assigned Fourteenth Infantry, has accepted a directorship in the Austrian Red Cross and has started for Washington en route to Budapest.——It is announced that Drs. James William White, John B. Deaver and Charles H. Frazier and six other surgeons of Philadelphia will soon sail for Europe to take charge of a ward, endowed by Philadelphians, in the American Ambulance Hospital, Paris.——Dr. Alexis Carrel, New York, is making an extensive tour of investigation to the French medical institutions at the front.

Aid for Belgian Profession.—The report of the treasurer, Dr. F. F. Simpson, Pittsburgh, of the committee of American physicians for the relief of the Belgian profession, for the week ended Jan. 2, 1915, lists the following contributions:

H. F. W.	$ 25.00
B. C.	2.50
D. W. C.	25.00
V. P. G.	25.00
Mrs. J. B. M.	100.00
E. F. B.	5.00
C. W. N.	25.00
In memory H. N. C.	10.00
S. J. M.	15.00
D. B.	25.00
Total	$257.50
Disbursements	None
Contributions previously reported	$405.00
Grand total	$662.50

Our French Exchanges.—A communication has been received from the publishers of the *Revue de Médecine* and

the *Revue de Chirurgie* stating that the departure for the seat of war of the editorial staff of these journals and of the printers from the publishing house made it necessary to suspend publication of both. They announce, however, that as soon as the war is over they will resume publication of the twin *Revues* and that the missing numbers for 1914 will be made up. The journals will be resumed under the same conditions as heretofore and the publishers express confidence that the subscribers and friends of the journals will keep up their interest in them which has made possible their success and the leading position they occupy in the world of science. Both are monthlies and were founded about thirty-four years ago. The contents of each have been listed and reviewed regularly in the Foreign Current Literature Department of THE JOURNAL.

Red Cross Notes.—The 200 boxes of clothing and blankets for the Belgians, recently sent to Holland, have been received and distributed.——An additional shipment of hospital supplies for the use of the Red Cross units at Pau, France, has just been made. This shipment includes 200 pounds of chloroform, 1,000 pounds of bandages, 5,000 yards of gauze, 10 bales of absorbent cotton, 200 pounds of permanganate of potash, tetanus antitoxin, surgical instruments and other hospital equipments.——Among the chief needs in the war zone are clothing for women and children and babies, overcoats for men, pajamas, shirts, convalescent robes, socks and bed linen.——During the past week a supplementary shipment of 100 cases of miscellaneous hospital supplies was sent to the British Red Cross, London.——The American Red Cross now has 44 surgeons and 150 nurses on duty in the war zone. ——In response to an appeal, the American Red Cross, on December 31, sent a donation of $3,000 to an American committee in Pekin and made arrangements with the Surgeon-General of the Army to purchase supplies on the Pacific Coast for immediate shipment to the Pekin committee.—— On December 31 the American Red Cross forwarded through the State Department $31,000 for the British, French, German and Servian Red Cross societies. Of the $6,000 sent to Great Britain, $3,000 is to be used to build two cottages, adjoining the Addington Park Hospital, Canterbury, for enteric fever cases.

LONDON LETTER

LONDON, Dec. 18, 1914.

The War

THE TREATMENT OF WOUNDS

The controversy on the antiseptic versus the aseptic treatment of wounds of the war continues. Sir Anthony Bowlby, consulting surgeon to the expeditionary force, has contributed an important paper on the subject to the *Lancet*. He points out that in this war there is never an armistice for the burial of the dead or the relief of the wounded, and it is usually only at night that stretcher bearers can remove men who cannot walk. On the other hand, the motor ambulances cannot take the wounded to the clearing hospitals by night because they would draw fire if they showed lights. Men who are shot in attacks lie outside the lines unaided even for days, for stretcher bearers would be shot if once they went toward the lines to help either British or Germans. Men are left lying in the wet mud of manured fields till their torn trousers and their wounds are so soaked in a mixture of blood and dirt that it is impossible even to get the torn muscles mechanically clean, let alone aseptic. The rifle bullets are different from those used in the Boer War and produce more severe wounds; another cause of difference is that wounds are often produced at very short distances. When the opponents are only a few yards apart the most typical explosive effects are produced. Bowlby has seen the greater part of the muscles of the forearm torn and extruded through a huge rent in the skin. But the most horrible wounds of all are produced by shells. The limb is often so violently contused by the mass of jagged metal tearing its way through all obstruction that far beyond the wound the tissues are so injured that they slough in large masses. Large portions of clothing covered with mud are frequently thrust deep among the torn muscles.

Treatment at the clearing stations, for which any available building such as a barn or railway waiting room, town hall, or church is used, is attended with great difficulty. The wounded are brought here on the stretchers from the field. Perhaps the station is equipped for 200, and in less than twenty-four hours 1,000 wounded have to be dressed. It is seldom possible to remove all the blood and mud stained uniforms because there is little to take its place, and in fractures of the lower extremities the dressings and splints have to be applied as the patient lies in the stretcher raised on trestles. The usual routine for all flesh wounds of the punctured variety and for all abdominal and thoracic wounds is to paint the skin far around with 2 per cent. iodin in alcohol and to wash the wound with either phenol (carbolic acid) from 1:20 to 1:40; iodin from 1 to 2 drains to the pint; or strong hydrogen peroxid. The dressings consist of mercuric cyanid and absorbent wool. For a fracture without extensive laceration or comminution the same procedure is adopted; but for an extensive fracture with laceration, whenever it is possible, the wounds are enlarged under anesthesia and washed out with antiseptics.

THE BELGIAN PHYSICIANS' AND PHARMACISTS' FUND

In spite of the demands on the medical profession from all sorts of funds established since the war and the serious financial losses resulting, a generous response is being made to the request to help Belgian confrères in their grievous plight. A scheme is being organized to obtain the help of the whole of the medical and pharmaceutic professions. The British Medical Association, the various medical corporations and the universities, are cooperating. Already about $10,000 has been received. Many physicians are offering the hospitality of their homes to Belgian confrères, and the medical societies and universities are freely thrown open to them. At a meeting of the Royal Society of Medicine the chairman, Sir Henry Morris, welcomed a number of Belgian physicians and expressed the high appreciation of the profession for their heroic nation and the deep sympathy they all felt for the terrible sufferings they had borne. A Belgian physician, Dr. Phillippe, returned thanks for the generosity of the society in cordially receiving them and placing its wonderful library and laboratories at their disposal. At a meeting of the Edinburgh Obstetrical Society, Professor Jacobs of Brussels gave an address on the position of the medical profession in Belgium. He was most cordially received at a reception to welcome him given by the president. Their country had suffered terribly and physicians had not been spared. They were devoting their care, and if necessary, their lives to their country. But they had no medical stores, their homes and pharmacies were ruined, and some were carrying on practice in ruined buildings.

THE DUTY OF MEDICAL STUDENTS

Sir Donald Macalister, president of the General Medical Council, stated in his official address that the need for efficient physicians and surgeons in the field and at home is not less urgent than the need for efficient soldiers and sailors. He felt it his duty to press this consideration on senior students who, though they have nearly completed their curriculum, are ready to forego the prospect of early qualification and to enroll themselves straightway in the combatant forces. He has received a letter from Surgeon-General Sir Alfred Keogh which contains the following passage: "I think with you that the senior student is best fulfilling his duty to the country by getting his degree and then joining the army. The need for young qualified men will become great, and I should regret that the supply should be diminished."

THE MANUFACTURE OF ANILIN DYES

In a previous letter to THE JOURNAL I have mentioned the project, supported by the government, of manufacturing in this country the anilin dyes for which we have been almost entirely dependent on Germany. Fortunately this country is not wholly unprepared. Since 1878 there has existed in Leeds a School of Tinctorial Chemistry and Dyeing, which during the past years has been doing a work which will now make it possible to establish the manufacture of dyestuffs in this country, on such a basis as will enable it, even after the termination of the war, to maintain its position in the face of foreign competition. At the head is Prof. A. G. Green, an eminent man in the chemical world. The University of Leeds—of which this school forms an important technologic department—in response to an appeal from the government placed its resources at the disposal of the Chemical Trades' Committee, of which Lord Moulton is the chairman. Professor Green has temporarily relinquished his ordinary duties in order to give his whole time to the service of this committee. The staff of his department, together with a number of chemists appointed for the purpose by the government, are devoting their energies to the elucidation of the many difficult and complex problems involved in the work.

PARIS LETTER

PARIS, Dec. 10, 1914.

The War

SECONDARY HEMORRHAGES IN MILITARY WOUNDS

These constitute one of the most trying problems in military surgery. A wound may appear to be almost cured when suddenly fifteen or twenty days after the injury, sometimes even later, a secondary hemorrhage occurs and often is fatal. Even in some cases in which the hemorrhage is controlled for the time, it occurs again without apparent cause and the patient dies. These secondary hemorrhages were the subject of an interesting discussion at the Société de chirurgie.

The first question is that of determining whether these hemorrhages, which appear to be extensive, are not in reality to be attributed to an unrecognized arterial wound. This is the opinion of Professors Quénu and Pierre Delbet, and the greater number of surgeons who took part in the discussion. Dr. P. Reynier thinks that secondary hemorrhages probably result from the late detachment of a little cicatrix of the arterial wall which has been grazed by the bullet. On the other hand, Dr. P. Sebileau has often observed in military wounds vascular effusions at a distance.

For the treatment of these hemorrhages, it is not sufficient to apply compression or to make injections of gelatinized serum. It is necessary to cleanse the wound energetically, to curet the granulations and after being assured that the arterial trunk is injured, to tie the ligature as nearly as possible at the level of the hemorrhagic focus. Notwithstanding, as Dr. Quénu remarked, it is necessary to bear in mind the difficulties caused by the inflammation on the vascular walls. If necessary, the ligation should be made in healthy tissue leaving the operator free to perform the operation that follows. Dr. Tuffier thinks that it is necessary to distinguish different cases: (1) when the wound is not very septic and the artery is easily accessible, the two ends of the wound should be ligated; (2) if the wound is septic and gangrenous, the ligature should be tied as near as possible but outside of the septic focus in healthy tissue; (3) if the wound, while sufficiently aseptic to permit a ligature in situ, is situated where it is impossible to tie the ligature, the artery must be sought above the wound and in an easily accessible region; (4) when the bleeding vessels cannot be reached, a deep incision should be made, the focus cleansed and tamponed and then horse-serum injected.

There are cases in which the most careful search discovers no arterial lesion. Pierre Delbet advises curetting the wounds in such cases and removing all the granulating tissue, for it is this which bleeds. During this curetting of the granulations, which are extraordinarily abundant and thick, the hemorrhage is profuse, but it stops as soon as tissues which are apparently almost normal are reached. To this curetting it is advisable to add a dressing with sodium nucleinate.

Dr. Quénu recently observed a case of secondary hemorrhage due to a wound of the external iliac vein. The ulceration of the vessel seemed in this case to be attributable to the pressure of the drain introduced into the wound, although this drain had constantly diminished in volume. Dr. Savariaud remarked that the ulceration of iliac vessels in contact with the drains is nothing exceptional when these drains are of rigid rubber, cut transversely by the scissors at the moment when they are used. Such accidents may easily be avoided by the use of molded drains.

FITNESS FOR ACTIVE SERVICE BY MEN AFFECTED WITH AORTIC INSUFFICIENCY

At one of the last sessions of the Société médicale des hôpitaux de Paris, Dr. C. Aubertin declared that out of a comparatively small number of patients he had been able to observe, five, aged from 20 to 30 years, who, though affected with aortic insufficiency, had passed without accidents through a campaign including the battle of the Marne. None of them had shown edema, arhythmia, crises of angina, stethoscopic signs at the side of the lungs, increased volume of the liver or the slightest asystolia.

A SOCIETY FOR FACILITATING COMMUNICATION BETWEEN THE WOUNDED AND THEIR FAMILIES

There has just been formed at Paris, under the title of the Oeuvre de la visite aux blessés, an association for the purpose of bringing to wounded soldiers now being cared for in provincial hospitals, whose families live in the departments of the Seine and Seine-et-Oise and cannot go often to see them, any articles (letters, clothing, etc.) that these families may wish to send.

Death of Dr. Barde

Dr. Auguste Barde has recently died at Geneva, aged 74. He studied at Berlin under Dr. Albert von Graefe and at Paris under Dr. Meyer. At one time Dr. Barde attended Baron Adolphe de Rothschild at Naples when the latter was the victim of an accident to his eye. As a token of gratitude, the baron founded at Geneva a very well-organized ophthalmologic hospital of which Dr. Barde was director for more than a half century.

BERLIN LETTER

BERLIN, Dec. 1, 1914.

The War

CHOLERA IN PRISON CAMP

In the Russian prisoners' camp at Ulm, eleven cases resembling cholera have been detected, to which four patients have already succumbed. Although the diagnosis at this writing has not been established, appropriate measures have already been taken to hinder the spread of an epidemic. In East Prussia, also, a soldier has been brought back who was infected with small-pox in Galicia. This patient, also, is strictly isolated. With reference to the fact that we are likely to get typhus fever from Russia, which otherwise is almost entirely unknown to us, the government has issued a circular in which advice to physicians for combating the disease and especially directions for disinfection are contained.

MENTAL DISTURBANCES IN WAR

The Berlin clinician, Professor Bonhöffer, recently delivered a very interesting address on the experiences so far encountered with reference to mental disturbances in the war. He opposed the widely spread public opinion that, on account of the mental and physical demands which the war brings with it, mentally sound men become insane. Still, severe emotional strain is not without effect on the mental condition of the population, sometimes acting with great intensity. One may compare the frame of mind of the population through the mobilization with the extravagant ideas which appear in any individual who misinterprets so many things. Thus, a spy was brought to the Charité who in full daylight had climbed a wall in order to look at the barracks yard. He proved to be one of the imbeciles well known in the Charité. Another remarkable general phenomenon was the confusion of facts in the memory. Such positive and negative falsifications of memory show themselves also in the reports from foreign countries. All these disturbances are an acute lack of harmony between the intellect and the emotional side of the mind. In the army itself such a disturbance of mental equilibrium may be observed. Bonhöffer could report on seventy soldiers and officers who had been brought to the nerve clinic of the Charité since the mobilization. More than half of them showed a psychopathic constitution: 16 per cent. showed alcoholism in addition to epilepsy, symptomatic psychoses and organic diseases of the brain. Chronic alcoholism with delirium was observed only among the reservists and Landwehr men during the mobilization, induced by the excitement and the hardships of the journey and the prohibition of alcohol on the road. A striking feature is the large number of psychopaths who were thrown out of mental equilibrium either on account of apprehension or a slight wound or the exertions of the war. In times of peace the management of the army lays the greatest stress on excluding these elements from the army. If, in spite of this, the war permits the appearance of such psychopaths in the army, the explanation is in the continued emotional strain, the lack of sleep, etc., which finally bring about a condition in which pathologic phenomena disclose the slight and hitherto latent disposition. Among patients so affected there were only five active soldiers. There is no psychosis peculiar to war. That which was described as such in the Russo-Japanese War must be designated as a neurasthenic psychosis. Hysteria gives a good prognosis in contrast with traumatic neuroses involving financial interests. Bonhöffer has so far had no experience on which to base an opinion as to whether an increase of mental disease in the army is to be expected from the war. In the English army in the latter part of the campaign against the Boers, such an increase was observed, and also in the Russo-Japanese War. After the war of 1870 there occurred an increase of mental diseases both in the civil population and in the military.

Marriages

Roland R. Cross, M.D., U. S. I. S., Pine Ridge, N. Dak., to Miss Isabel Hunter of Dahlgren, Ill., at Rushville, Neb., November 19.

Charles D. Frederick O'Hern, M.D., Tulsa, Okla., to Miss Frances Hazel Larkin of Bartlesville, Okla., in November.

James George Williamson, Jr., M.D., Columbia, Tenn., to Miss Margaret Frierson of Chattanooga, Tenn., December 9.

P. A. Surg. Hugh de Valin, U. S. P. H. S., Washington, D. C., to Miss Frances Watson of New Orleans, December 28.

Wirt Bradley Dakin, M.D., Los Angeles, to Miss Hariette Ruecker of Portage, Wis., at Pasadena, Cal., December 31.

William Francis Finley, M.D., Lonsdale, Minn., to Miss Mary Grace Donovan of McGregor, Ia., September 15.

Harry Denton Stryker, M.D., Reading, Pa., to Miss Minnie W. Gring of West Reading, Pa., December 18.

Samuel Bernard Rosenzweig, M.D., to Miss Josephine Frances Taub, both of New York City, December 2.

William Aaron Bessesen, M.D., Albert Lea, Minn., to Miss Beatrice Gjertsen of Minneapolis, January 4.

Carroll Edward Foley, M.D., Lovettsville, Va., to Miss Charlotte Woody of Richmond, December 12.

Percy Hoxie Wood, M.D., to Miss Amelia Alcorn Russell, both of Memphis, Tenn., November 25.

Hugh Warren Brent, M.D., to Miss Helene R. Vogeler, both of Baltimore, December 16.

Foy Roberson, M.D., to Miss Helen Gribble, both of Durham, N. C., December 10.

Walter Edgar Barbour, M.D., to Miss Leake Clarke, both of Atlanta, Ga., recently.

Deaths

Paul Fitzsimons Eve, M.D. University of Tennessee, Nashville, 1878; College of Physicians and Surgeons in the City of New York, 1880; a Fellow of the American Medical Association; formerly president of the Tennessee State Medical Association and Nashville Academy of Medicine; local surgeon at Nashville for the Louisville and Nashville, and Nashville, Chattanooga and St. Louis railways and the Nashville Railway and Light Company; surgeon to Eve's Infirmary; one of the most prominent surgeons of the South; died at his home in Nashville, December 26, from septicemia, aged 58.

Robert Walker Ramsey, M.D. Jefferson Medical College, 1874; a Fellow of the American Medical Association; from 1900 to 1906 a member of the Pennsylvania State Board of Medical Examiners; coroner of Franklin County, Pa., from 1879 to 1882; a member of the medical staff of the Chambersburg Hospital and vice-president and director of the Chambersburg Trust Company; died at his home in Chambersburg, December 26, from arthritis deformans, aged 54.

John Wesley Carhart, M.D. College of Physicians and Surgeons, Chicago, 1883; a member of the State Medical Association of Texas; and for three years county physician of Lampasas County; for many years a clergyman of the Methodist Episcopal Church; who claimed to have built the first automobile of the present-day type; died at his home in San Antonio, Tex., December 28, from heart disease, aged 80.

Morley Da Costa Bates, M.D. Rush Medical College, 1891; a Fellow of the American Medical Association; instructor in medicine in his Alma Mater; a member of the staff and treasurer of Grace Hospital, Chicago, and physician to the Metropolitan West Side Elevated Railway Company; died in the Presbyterian Hospital, Chicago, December 24, from cerebral hemorrhage, aged 42.

Robert Dandridge Jackson, M.D. Medical College of the State of South Carolina, 1851; a member and one of the organizers of the South Carolina Medical Association; a surgeon in the Confederate service throughout the Civil War; for many years a practitioner of Jefferson County, Ala., died at the home of his daughter in Orrville, Ala., December 20, aged 84.

Roscoe McClellan Huffman, M.D. Toledo (Ohio) Medical College, 1913; a member of the staff of the Pool Hospital, Port Clinton, Ohio; while driving across the tracks of the Lake Shore Road at Port Clinton, in his automobile, December 20, was struck by a train and instantly killed, aged 25.

Franklin Van Buren Gildersleeve, M.D. New York University, New York City, 1866; a hospital steward and later assistant surgeon of U. S. Volunteers during the Civil War; afterward a practitioner of New York City; died in St. Francis' Hospital in that city, December 26, aged 72.

Andrew Jackson Smith, M.D. College of Physicians and Surgeons in the City of New York, 1863; a member of the Connecticut State Medical Society and for many years a practitioner of East Bridgeport, Conn.; died at his home, December 20, aged 75.

Kathrine Jane Rayl, M.D. University of Michigan, Ann Arbor, 1902; a Fellow of the American Medical Association; president of the Galion (Ohio) Hospital Association; died at the home of her mother in Galion, December 19, aged 51.

George G. Hitchcock, M.D. New York Homeopathic Medical College, 1870; for more than forty years a practitioner of South Hadley Falls; died at his home in that town, December 20, from the effects of a fall two days before, aged 65.

Wallace Kirkwood Hughes, M.D. Western Reserve University, Cleveland, 1859; for nearly half a century a practitioner of Berlin Center, Ohio; died at his home in that place, December 19, from arteriosclerosis, aged 79.

Francis Alvin Tillinghast, M.D. University of Vermont, Burlington, 1867; one of the best known practitioners of the Pawtuxet Valley, R. I.; died at his home in Arctic Centre, R. I., December 24, from pneumonia, aged 71.

Edwin Brown Harper, M.D. Ohio Medical University, London, 1896; for four years a member of the Ohio State Legislature from Summit County; died at his home in Clinton, December 2, from tuberculosis, aged 48.

Richard J. Leonard, M.D. University of Louisville, Ky., 1880; medical director of the Fraternal Bankers of America and Royal Fraternal Union; died at his home in St. Louis, December 19, from pneumonia, aged 64.

Emory Sherman, M.D. Rush Medical College, 1885; of State Center, Ia.; for many years a practitioner of Independence and Alden, Ia.; died at the home of his daughter in State Center, December 3, aged 78.

Calvin Jacob Paleir, M.D. Vanderbilt University, Nashville, Tenn., 1894; of Blowing Rock, N. C., and president of the local bank; died at the Charlotte (N. C.) Sanatorium, December 16, from arteriosclerosis.

James S. Eves, M.D. University of Pennsylvania, Philadelphia, 1862; a Fellow of the American Medical Association; died at his home near New London, Pa., December 17, from cerebral hemorrhage, aged 66.

Jay Sylvester Corcoran, M.D. University of Michigan, Ann Arbor, 1883; of Ubly, Mich.; a Fellow of the American Medical Association; died in the Hubbard Hospital, Bad Axe, Mich., December 10, aged 60.

John F. A. Clausnitzer, M.D. University of Leipzig, Germany, 1878; for more than thirty years a practitioner of the East Side, New York City; died at his home, December 20, from nephritis, aged 61.

James T. Strohecker, M.D. Jefferson Medical College, 1879; for many years a practitioner and druggist of Beavertown, Pa.; died at his home in that place, December 15, from heart disease, aged 62.

Edward Russell Cogswell, M.D. Harvard Medical School, 1867; a member of the Massachusetts Medical Society; died at his home in Cambridge, Mass., December 22, from pneumonia, aged 73.

Robert B. Travis, M.D. Memphis (Tenn.) Medical College, 1858; for more than half a century a practitioner of Benton County, Tenn.; died at his home in Camden, December 19, aged 84.

James E. Talbott, M.D. Medical College of Ohio, Cincinnati, 1875; a member of the Indiana State Medical Association; died at his home in Linton, Ind., December 18, aged 66.

Frederick Milton Phillips, M.D. New York University, New York City, 1893; of Newburgh, N. Y.; died from heart disease, December 21, while making a professional call, aged 45.

Abner White, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1880; for fifty-two years a practitioner; died at his home in Missouri Valley, Ia., December 12, aged 89.

Isaac N. Leyda, M.D. University of Pennsylvania, Philadelphia, 1876; until 1907, a practitioner of Manor, Pa.; died at his home in Sulphur, Okla., December 10, aged 69.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

NEUROSINE, DIOVIBURNIA, GERMILETUM AND PALPEBRINE

Report of the Council on Pharmacy and Chemistry

Neurosine, Dioviburnia, Germiletum and Palpebrine are "shotgun" proprietaries typical of the polypharmacy of the past three or four decades. They are marketed by the Dios Chemical Company, St. Louis, Mo. On the recommendation of the referee, the Council has authorized the publication of this report. W. A. PUCKNER, Secretary.

Neurosine

According to the manufacturers, each fluidounce of Neurosine represents:

"Bromid of potassium, C. P.	40 grains
"Bromid of sodium, C. P.	40 grains
"Bromid of ammonium, C. P.	40 grains
"Bromid of zinc	1 grain
"Extract Lupulin	32 grains
"Cascara sagrada, fl. ex.	40 minims
"Extract Henbane	.075 grain
"Extract Belladonna	.075 grain
"Extract Cannabis indica	.60 grain
"Oil Bitter Almonds	.060 grain

"Aromatic Elixirs."

No physician would think for a moment of prescribing all of the drugs contained in Neurosine for any one condition. Yet physicians are urged to use this nostrum in insomnia, hysteria, neurasthenia, migraine, neuralgia, delirium tremens and in a host of other conditions.

It is recommended in the treatment of epilepsy on this ground:

"Neurosine is presented in a very palatable and agreeable form and can be administered for an indefinite time without untoward by-effects as so often attends the use of the commercial bromides. In order to secure lasting benefits the treatment should be extended over a long period of time."

The evident implication here is that the recognized drawbacks of bromid medication are due to impurities present in the commercial bromids and that the teachings of modern medicine with regard to caution in the use of bromids do not apply in the case of Neurosine.

The assurance is offered:

"Neurosine contains no chloral, morphin or other objectionable drug —a fact of the utmost importance when administering medicines to neurotic women."

"As a nerve-calmative and sleep-producer nothing can excel Neurosine . . . It should be borne in mind that this preparation contains no opium, morphine, chloral or habit-forming drugs . . . Neurosine being a harmless remedy is especially indicated for neurotic individuals."

Apart from cannabis indica, Neurosine contains no efficient hypnotic. Cannabis indica is a dangerous drug, whose administration to "neurotic individuals" is by no means free from danger — especially when it is given under a proprietary name that carries no warning of its presence.

Here is another recommendation—this time for chorea:

"All authorities recommend the bromides, hyoscyamus and cannabis indica in this disease. These remedies are all combined in Neurosine, the ideal calmative for both children and adults."

On the contrary, practically "all [medical] authorities" will admit that it is undesirable to keep a child under the influence of bromids if this can be avoided. Such treatment is mentioned only for use as a last resort in extreme cases. Hyoscyamus and cannabis indica are mentioned in connection with chorea by few authorities, and then merely as probably valueless.

Not content with recommending the promiscuous use of this already too complex mixture, the Dios Chemical Company advises physicians to combine it with iron, when chalybeate and tonic effects are to be combined with "a nervine," with acetanilid for "irritable cough," headache and neuralgia, with antipyrin in asthma and with Dioviburnia—another Dios nostrum—in all female ailments. Neurosine and its congeners violate practically all the principles of modern therapeutics.

Germiletum

Germiletum is a member of the large class of alkaline antiseptic solutions with excessively complex formulas. In this case not only is the formula complex but also the Dios Chemical Company finds it impossible even to assign a constant composition to it—at least the "formulas" which appear on the different styles of Germiletum labels and advertising circulars vary greatly.

The company says:

"We appeal only to the Doctor's judgment of his estimation of the formula."

"Doctor you will readily determine from the formula the class of cases in which you have a right to expect satisfactory results."

Yet the "formulas" given present so great a variety and such confusion that it is not clear even to a chemist just what the Dios Company wants the medical profession to regard as the composition of Germiletum.

The following statements of "composition" have appeared at various times:

1. In an advertising circular sent out some time ago:

$$\text{"[HBF}_4 + \text{BOH (OC}_7\text{H}_4\text{ COOH)}_2 + \text{+ BOH (OC}_6\text{H}_3\text{COOH)}_2 + \text{C}_3\text{H}_3\text{BO}_3 + \text{CH}_2\text{O} + \text{C}_{13}\text{H}_{18}\text{O} + \text{C}_{15}\text{H}_{20}\text{O} + \text{C}_{20}\text{H}_{25}\text{N}_2\text{Cl.]"}$$

2. In advertising circulars which have been received of late, being wrapped with a sample package and with the "large size" trade package:

$$\text{"[C}_7\text{H}_6\text{O}_2 + \text{H}_3\text{BO}_3 + \text{C}_3\text{H}_3\text{BO}_3 + (\text{CH}_2\text{O})_3 + \text{C}_{10}\text{H}_{20}\text{O} + \text{C}_{10}\text{H}_{18}\text{O} + \text{C}_2\text{H}_6\text{O]"}$$

3. In another advertising circular:

"Germiletum is a slightly alkaline chemical solution of Borohydrofluoric Acid, Borosalylbenzoic Acid, Boroglycerine, Formaldehyde with Menthol, Thymol and Antiseptic Aromatics."

4. On the label of a sample package sent through the mails during 1914, and on the label of a "small size" trade package purchased in 1914:

"FORMULA.—Borohydrofluoric Acid, Borosalylbenzoic Acid, Boroglycerine, Formaldehyde with Menthol, Thymol, Amyl Acetate and other Antiseptic Aromatics."

5. In the circular which was wrapped around the sample package referred to above, and around the "large size" trade package purchased at the same time that the "small size" package was bought:

"Germiletum is a slightly alkaline chemical solution of Borobenzoic Acid, Boroglycerine Formaldehyde, with Menthol, Thymol and other Antiseptec [*sic*] Aromatics."

6. On the sample package, on the "small size" trade package and on the wrappers of the "large size" trade package:

"Alcohol 18 per cent.; Formalin 3/4 M. per oz.; Amyl Acetate 1/3 M. per oz." (also written "Acetate Amyl.")

The label on the large trade package states that Germiletum contains "Formalin ½ M. per oz."

One and all of these various formulas spell mystery. The existence of some of the constituents is problematic; even if the theoretical possibility of such combinations be conceded, some of them could not exist in Germiletum, for they would be broken up by the alkaline fluid. As illustrating the contradictions which the formulas present: While the wrapper of the "large size" trade package claims that Germiletum contains ¾ minims Formalin (Formalin is a proprietary name for a 40 per cent. formaldehyd solution) the label on the bottle claims only ½ minim. Again, while the composition expressed in chemical symbols asserts that "H_3BO_3" (boric acid) is a constituent of Germiletum, the "formula" which follows it states that Germiletum has an alkaline reaction; hence it cannot contain much boric acid. Finally, the "small size" bottle of Germiletum purchased at the same time as the "large size" bottle and also the label of a sample

package sent through the mails to a physician in 1914, give as a constituent "Borohydrofluoric Acid," which is mentioned neither on the label of the "large size" trade package nor in the pamphlet wrapped around it. The only information which these contradictory "formulas" can convey to a physician is that Germiletum is an unscientific, varying mixture of many drugs.

A trade package, having the name "Germiletum" blown in the glass, bears on the label recommendations for its use in the treatment of "catarrh," "Gastritis, Stomatitis, Gastric and Intestinal Catarrh," "Leucorrhea and Uterine Diseases," "Hemorrhoids," "Whooping Cough," "Tonsilitis and other forms of sore throat" and "Eczema."

The following statement on the label is designed to induce physicians to place false confidence in Germiletum to the danger of their patients:

"The lying-in-room should be thoroughly sprayed with Germiletum. Can be relied upon to destroy the living particles which so generally constitute contagion."

This claim, as well as the assertion which appears on the label of a sample package and of the "small size" trade package that it is "PAR-EXCELLENT IN OBSTETRICAL PRACTICE" is almost criminal, as Fussell[1] has said, since to depend on any preparation of this sort is to court disaster.

The booklet around the trade package makes the claim that Germiletum "is the best antiseptic"—evidently largely because it is claimed to be "the blandest of all"—and that it is "thoroughly germicidal" and even that it is "the best disinfectant obtainable." It also contains such unwarranted and misleading claims and suggestions as:

". . . preparatory to all operative work—Germiletum should be used freely in spraying the atmosphere . . ."

"Operative wounds, whether large or small, can be rendered thoroughly antiseptic by freely spraying them with Germiletum. . . ."

". . . it may be given internally in many dyspepsias and in all zymotic diseases. . . . In such conditions Germiletum is the ideal internal antiseptic and disinfectant."

In the present advertising, no evidence whatever is offered for the value of Germiletum, the Dios Company contenting itself with unsupported claims and cant phrases such as

". . . the truth is only reached through a final appeal to intelligent practical experience."

In the old circulars only crude, uncritical and meaningless tests to establish the antiseptic value of Germiletum are reported and none whatever as to its germicidal action. In the advertising matter sent out some time ago, for instance, were given "Microscopical, Bacteriological and Chemical Tests, Comparing Germiletum with Carbolic Acid." These tests have no value whatever, unless it be to show the worthlessness of the preparation. This is particularly true as regards a series of experiments on "Germiletum as a Preventive of Lactic Fermentation," in which one part of Germiletum in thirty parts of milk did not prevent fermentation. Such effect as indicated is probably due to the formaldehyd present. The tests show the absurdity of using the preparation for internal and external purposes. The referee challenges the therapeutic claims on the basis that they are extravagant and unsubstantiated. (The Chemical Laboratory of the American Medical Association reports that the alkalinity of Germiletum corresponds approximately to a 1 per cent. borax solution.)

Dioviburnia

Dioviburnia, another Dios nostrum, according to the label, has the following composition:

"Every fl. oz. contains 3-4 dr. each of the fl. extracts, Viburnum Prunifolium, Viburnum Opulus, Dioscorea Villosa, Aletris Farinosa, Helonias Dioica, Mitchellae [*sic*] Repens, Caulophyllum Thalictroides, Scutellaria Laterifolia." [Lateriflora?—Ed.]

Further, according to the label, Dioviburnia contains 18 per cent. alcohol. If this statement is correct then the "formula" is false, for the fluid extracts named contain from 25 to 73 per cent. of alcohol. As—according to the "formula"—these fluid extracts constitute three-fourths of Dioviburnia, the average alcohol-content in the whole mixture must of necessity be much above 18 per cent.[1] According to the makers, Dioviburnia is "unexcelled" for:

"Amenorrhea, Dysmenorrhea, Leucorrhea, Puerperal Convulsions, Prolapsus Uteri, Menorrhagia, Threatened Abortion, Parturition, Subinvolution, Miscarriage, and a general relaxed condition of the uterus and appendages, together with the various aches and pains peculiar to women."

Around the sample bottle of Dioviburnia is wrapped a booklet entitled "A Treatise on Uterine Diseases and Obstetrical Hints," said to be "For the Profession Only." The booklet has been prepared, physicians are told, to present "some very valuable suggestions" regarding the treatment of female disorders and the attention of the medical profession is "earnestly" called to the "very remarkable medicine," Dioviburnia. Further, it is said that Dioviburnia was devised by the Dios Chemical Company because there was an "absolute necessity" for some really efficient internal treatment in female diseases. The company backs up its statements by such claims as:

"The most valuable preparation, therapeutically, ever offered."

"[Contains] every essential for toning up the female organs of generation, and relieving pain."

"A general and special tonic, antispasmodic and invigorating cordial."

While the company directs the attention of physicians to the "well-known, therapeutical effects of each individual constituent" of Dioviburnia, there is in reality little positive evidence regarding the action of any of the drugs contained in the nostrum. Most writers on materia medica do not even mention these drugs and the few who do discuss them, either question or deny their medicinal value. But if every drug claimed to be present in Dioviburnia had some actual demonstrated therapeutic properties, it still would be impossible to predict the action of such a combination in the many and varied conditions for which it is exploited. Certainly there is no warrant for such statements as:

"In Painful Dysmenorrhea [*sic*] Dioviburnia is especially indicated, and its continued use will invariably give relief."

"In cases of Leucorrhea of long standing, Dioviburnia, together with local treatment, invariably gives relief."

"Dioviburnia is efficient in cases of subinvolution; it cures by its tonic effects . . ."

The effects of the drugs alleged to be present in Dioviburnia are not such as to justify the hope of either "cure" or "invariable relief." In a way the Dios Chemical Company seems to recognize the inefficiency of Dioviburnia since it frequently suggests that it be used in combination with drugs of known value; but it ascribes all favorable results to its own product:

"In chronic constipation fluid extract of cascara sagrada aromatic may be combined with Dioviburnia."

"In cases of habitual abortion, depending on syphilitic taint, a prescription containing the following should be used during the entire pregnancy:

℞ "Hydrarg. Chlor. Corros ..... gr. 1
"Potass. Iodid ..... dram 1
"Dioviburnia ..... ounces 16"

"An Anemic or Chlorotic patient, suffering with absence of the menstrual flow, should take DIOVIBURNIA combined with Iron."

"In leucorrhea depending on endocervicitis, hot astringent douches once daily should be given. Local applications of iodin are useful in chronic conditions. Internally, Dioviburnia promotes healing."

"Rest in bed, hot douches of a one-half per cent. solution of compound cresol solution and Dioviburnia internally, a teaspoonful every 3 hours will rarely fail to cure endometritis in a few days."

"In specific vaginitis, a solution of potassium permanganate (1 to 1000) should be used as a douche twice daily. Internally give the following:

"Sodii benzoate ..... ½ ounce
"Dioviburnia ..... 16 ounces
"M. sig., Teaspoonful every three hours."

"Prolapsus Uteri is benefited, and often cured, by DIOVIBURNIA combined with local treatment in the shape of tampons, pessaries, electricity, etc."

1. Fussell, M. H.: Dangers of Certain Ethical Proprietary Preparations to Both Physicians and Public, The Journal A. M. A., Oct. 7, 1911, p. 1196.

1. Five of these fluidextracts have their alcohol-content determined by the Pharmacopeia or National Formulary. Three are not recognized and hence their alcohol-content is not defined by law. The alcohol-content of the mixture of fluidextracts said to be in Dioviburnia has been kindly furnished by five leading pharmaceutical houses. If the lowest alcohol-content of the several fluidextracts is made the basis of calculation, Dioviburnia should contain at least 30.75 per cent. of alcohol, or more than half as much again as the amount declared on the label.

If Dioviburnia will cure specific vaginitis, anemia, etc., so will a cobblestone make excellent soup. All that is necessary in the former case is to add certain potent drugs that might be indicated in the pathologic conditions mentioned and, in the latter case, to combine suitable amounts of beef, chicken, green turtle or vegetables, with herbs and other seasoning.

Palpebrine

According to the Dios Chemical Company, Palpebrine is "A Reliable External Ocular Antiseptic" having, it is said, the following composition:

". . . each fluid ounce contains 1/116 grain Sulphate of Morphia, 1/7 grain Sulphate of Zinc, 1/11 grain Bi-Chloride of Mercury, 5½ grains Boric Acid, ¼ grain Salicylic Acid."

The essential virtues ascribed to Palpebrine, according to its makers, are its harmlessness and its therapeutic efficiency due, presumably, to its complex composition:

"Attention is called to the constituents of this formula, each one of which is used by ophthalmologists. Their combination in Palpebrine is such as to blend their action in a very happy manner. Palpebrine acts as an antiseptic, an irritant, an astringent, and a nerve tonic to the mucous membrane of the eye."

"Palpebrine is superior in its action to the remedies now in use. It contains all the constituents of Aqua Conradi . . . But to these are added a number of other agents which will prove it to be of much greater value and give it a broader field for action."

In all external afflictions of the eye the free use of Palpebrine is suggested in such statements as:

"They [general practitioners] will therefore gladly receive from our hands an efficacious preparation which may be used with perfect safety."

"The name of our preparation—Palpebrine, is derived from the Latin *palpebra*, the eyelid, and is well fitted, as it designates at a glance the sphere of action of Palpebrine."

"With the assistance of Palpebrine the general practitioner can successfully treat all cases of external eye disease ordinarily encountered in his practice."

One of the members of the Council staff of clinical consultants calls attention to the fact that much vitally valuable time might be lost in a case of iritis, for example, which being unrecognized, should be treated with Palpebrine on the strength of the Dios Chemical Company's advertisements. Even more dangerous is the recommendation of Palpebrine for the prevention of ophthalmia in the newborn, especially as this recommendation is coupled with an attempt to discredit the established treatment with silver nitrate solution:

"The use of severe remedies for this purpose has been discarded by most physicians. . . ."

While it is doubtless true that ophthalmia neonatorum may be averted by other drugs than silver salts, it is utterly unjustifiable to suggest that the established method of treatment by means of silver salt irrigations has been generally discarded.

[EDITORIAL NOTE.—The four nostrums mentioned above have been grouped together for publication to call attention to one phase of the proprietary business. A fact not mentioned in the Council's report is that these nostrums are manufactured and promoted by a concern that belongs to a type we have often designated "pseudo-chemical" companies. By this is meant companies that are not in the legitimate business of pharmacy or chemistry, but organized to exploit one, two or in some instances half a dozen proprietaries. "Patent medicines" are exploited by this class of "companies." The Dios Chemical Company is not a chemical company, except in name. J. H. Chambers, the founder so far as we can learn, never claimed any special knowledge of chemistry, pharmacy or medicine. The officers at the present time are: J. H. Chambers, president; M. E. Chambers, vice-president; Leslie T. Chambers, treasurer, and Arthur Chambers, secretary. M. E. is the wife of J. H., and Leslie T. and Arthur are sons.

This is simply one illustration of the fact noted above. Some physicians have been and are prescribing nostrums originated, manufactured and advertised by laymen who are not in the legitimate pharmacy business. In addition, such physicians have been accepting the statements of laymen, not only as to the composition of the nostrums, but as to their use. In every state the practice of pharmacy is regulated by law: before assuming the responsibility of compounding medicines a druggist must have studied and passed an examination in pharmacy. Public safety demands and the law requires it. There are some doctors, however, who will allow laymen who are not chemists, pharmacists nor physicians to formulate and compound a prescription and tell them what it is good for and how to use it.

The Dios Chemical Company is not an isolated instance: we have already referred to some; we shall take occasion to refer to others in the future. That such concerns flourish is a reflection not so much on the shrewd laymen who exploit the medical profession—and through it the public—as it is on the physicians who cast their scientific training to the winds and permit themselves to be thus exploited.]

CORRECTION

Quantity of Iodine in Iodotone

In this department of THE JOURNAL for Dec. 12, 1914, p. 2149, under the heading "Iodotone" the statement is made: "Iodotone, sold by Eimer and Amend, New York, is stated to be a solution of hydrogen iodid (hydriodic acid) in glycerin and to contain 1 grain of iodin per fluid ounce." This should read—"one grain to each fluid dram."

Correspondence

Military Surgery

To the Editor:—Some statements in Dr. Hoguet's "Observations on Military Surgery in the Early Weeks of the War" (THE JOURNAL, Dec. 19, 1914, p. 2194) purporting to represent a contribution based on his experiences in the American hospital at Neuilly-Paris, should not be allowed to remain unchallenged.

Dr. Hoguet has favored us with more than his personal experience, by familiarizing us with frontal organization and transport, but, unfortunately, does not correlate these with his experience in Paris, which city must be looked on as basal as far as medical aid is concerned, thereby failing to allow the uninitiated an insight into the real problems of modern war surgery, for a few operations performed at base hospitals have scarcely anything in common with military surgery in the more restricted sense of the word.

Dr. Hoguet further says, "When a strong bone, such as the humerus or femur, is struck by a bullet within its zone of maximum speed (5,465 yards), one of two things may happen: Either the bone is cleanly perforated—and this is very rare—or else it is completely shattered," and plainly shows that he either is not familiar with ballistics or has made an error in copying from whatever source he obtained his information. The German rifle is sighted up to 2,187 yards, and if even the best German sharpshooter, by elevating his rifle about 45 degrees, were to fire at me at 5,465 yards (over 3 miles!) I would have the choice of stepping out of the way, since it would require over half a minute for the missile to reach the target, if it would reach it at all, or catching the bullet with my bare hand as a souvenir of modern medicomilitary literature.

The fact is that both near and distant shots bring about the so-called "butterfly" fractures with this difference, that the closer the range the smaller the fragments, which, when the live force is near its maximum (there is no such a thing as maximum since the muzzle velocity loses practically after encountering air friction), may amount to extensive comminution. Gunshot wounds are governed by a fixed, immutable law (Newton's) and while the density (air and liquid

content) of the tissues may result in pathologic variations from a mere puncture to extensive laceration and destruction, there is but one law governing any and all injuries.

This law, however, has very little to do with the clinical course of an injury, but the military surgeon will be in a position so to apply the laws of bacteriology as not only to explain but to control most infections. One cannot but express wonder at a paragraph in the article under consideration when the author endeavors to seek an explanation why infected compound fractures of the arm heal better than like injuries of the thigh. Dr. Hoguet indulges in speculation about better supply of blood and easier drainage. Any one familiar with the elements of anatomy knows that the thigh can show at least as good a blood supply as the arm, and when it comes to the question of effective drainage, I cannot recall that the mere thickness of a group of muscles ever interfered with the introduction of a drainage tube. If the author had but considered a simple experience on the battlefield, namely, that a soldier hit in the arm can immobilize his limb by pinning his affected sleeve to his tunic and still be about, and thereby retain good vitality, especially during transport, while a combatant sustaining a like injury in the thigh must necessarily remain recumbent and often suffers during transport from ineffective immobilization (oh, for that significant little word "rest" in military surgery!) thereby sustaining additional trauma, if not contact infection, easily resulting in a veritable ideal condition for "life-saving" amputation all speculation would have proved unnecessary.

In this respect at least the experience of the present war in Europe is not likely to bring out anything not already well known to military surgeons.

GUSTAVUS M. BLECH, M.D., Chicago.

Bureaus of Information for American Postgraduate Study

To the Editor:—While recently in New York, I noticed the large number of physicians seeking postgraduate work who daily arrived at the various clinics and hospitals and who, being unable to go to Europe, had turned to the home clinics in the United States. No doubt all of our large centers have received their share of these postgraduate students and workers.

It occurred to me that each large city having postgraduate facilities or extensive medical centers might do well to have a centralized and well-organized bureau of information for the benefit of the stranger, where the newly arrived physician might obtain, with the least loss of time, such information as would assist him in locating the particular line of clinical and special instruction desired in the shortest time.

In New York I saw a number of physicians visiting a number of hospitals, clinics and instructors before finding the most adaptable place for their desired studies, and doing this at an enormous expense of time, when one considers that usually the busy physician has short enough time in the postgraduate centers.

I would suggest a get-together movement on the part of the leaders in post-graduate schools to establish a bureau of medical information, either as a part of the medical society or part of the medical committee of the chamber of commerce, and as soon as such is developed, thoroughly advertise the fact to the profession. A small registration fee might be charged the visiting physicians, for which their problems might be taken under advisement and assistance given in the matter of finding appropriate living accommodations within easy access of the clinic or hospital to be attended.

Physicians in New York usually feel that the stranger requires several days before he becomes oriented in the city. I know I would have greatly appreciated such guidance and direction as I herein suggest.

By publishing this letter you may stimulate a movement which I feel would be in accordance with American advance in the systematic upbuilding of our clinical centers, whose value is certainly second to none, even European centers of overcongestion, which are at present inaccessible.

C. O. JASTER, Elyria, Ohio.

Formula for Cleaning Glassware

To the Editor:—I wish to call attention to the fact that I have had great success during the last few months in cleaning stained slides and glassware by using a preparation consisting of equal parts of a 6 per cent. solution of sodium hydroxid and a 2 per cent. solution of calcium carbonate. Boil the slides in this mixture for one minute. The slides are then rinsed in cold water and wiped.

ABE H. KAPLAN,
Laboratory Department,
City and County Hospital, St. Paul.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

LITERATURE ON DIPHTHERIA ANTITOXIN

To the Editor:—Please give me references to the latest articles on the administration of diphtheria antitoxin. M. F.

ANSWER.—The following is a list of references on this subject:

Park, W. H.; Zingher, A., and Serota, H. M.: Schick's Reaction and Its Practical Application, *Arch. Pediat.*, July, 1914; abst., THE JOURNAL, Aug. 22, 1914, p. 704.

Rolleston, J. D., and MacLeod, C.: Intramuscular Injections of Antitoxin in Diphtheria, *Brit. Jour. Child. Dis.*, July, 1914; abstr., THE JOURNAL, Aug. 29, 1914, p. 807.

Woody, S. S.: The Use of Antitoxin in Diphtheria, THE JOURNAL, Sept. 5, 1914, p. 861.

The Proper Dosage of Diphtheria Antitoxin, editorial, THE JOURNAL, Dec. 12, 1914, p. 2134.

Lund, A., and Uspensky, N.: Dosage of Antitoxin in Diphtheria, *Med. Obozr.*, 1913, lxxix, No. 1; abstr., THE JOURNAL, June 7, 1913, p. 1843.

Value of Immunizing Doses of Diphtheria Serum, Query and Minor Notes, THE JOURNAL, Jan. 11, 1913, p. 147.

Park, W. H.: Antitoxin Administration, *Boston Med. and Surg. Jour.*, Jan. 16, 1914; abstr., THE JOURNAL, Feb. 1, 1913, p. 398.

Reiche, F.: Antitoxin Treatment of Diphtheria, *Med. Klin.*, Jan. 5, 1913.

Schöne, C.: Diphtheria Antitoxin and Proper Dosage, *Deutsch. med. Wchnschr.*, Feb. 20, 1913.

Kraus, R., and Baecher, S.: The Relations Between Antitoxin Content and the Curative Action of Diphtheria Antitoxin, *Deutsch. med. Wchnschr.*, June 5, 1913.

The Presence of Diphtheria Antitoxin in the Blood of Normal Persons, editorial, THE JOURNAL, June 6, 1914, p. 1810.

Diphtheria Antitoxin, editorial, THE JOURNAL, Sept. 5, 1914, p. 873.

Otto, R.: Diphtheria Antitoxin in Bacilli Carriers, *Deutsch. med. Wchnschr.*, March 12, 1914; abstr., THE JOURNAL, April 18, 1914, p. 1291.

Joseph, K.: Danger and Prophylaxis of Anaphylaxis from Diphtheria Antitoxin, *Deutsch. med. Wchnschr.*, March 12, 1914; abstr., THE JOURNAL, April 18, 1914, p. 1291.

ETHER DRINKING

To the Editor:—Please give me information concerning the drinking of ether as a habit. A. R. Y.

ANSWER.—The use of ether as an intoxicant, referred to in a few text-books and some journals, is a rather uncommon practice. Most of the reports relate to observations of this habit in Ireland, where it is limited to restricted well-defined districts and in which it is almost universally practiced. Ether drinking began in these places about the middle of the last century. A certain formality is observed by some drinkers, such as the taking of a mouthful of cold water before and after the drug is swallowed; the ether is taken both diluted and pure. The real habitué, however, scorns the use of water as well as the diluted drug. The quantity taken for one debauch is from 2 drams to 1 pint. Just as in the case of alcoholic drinks, the tolerance to the drug and the amount to produce intoxication vary.

The effects are similar to those of alcohol, but they come on and wear off more rapidly, leaving little or no discomfort; hence the tendency to repeat the intoxication, which is regarded by some as pleasurable, so that there may be as many as half a dozen to twenty periods of ether-drunkenness during twenty-four hours. Quantities of ether as large as 1 liter a day are mentioned by various writers, as being consumed in this way. There is a very interesting report by

Ewald of an "ether breather," a well-educated man who was able to demonstrate and analyze the immediate effects of the drug, on his own mental faculties in particular. Insanity is not directly connected with the habit by those who have observed the consequences of this exceptional form of drunkenness. The effect on health seems to be limited to chronic gastritis and dyspepsia. However, several sudden deaths in the "ether area" of Ireland not otherwise explained have been attributed to ether drinking. Sometimes conditions very similar to those of chronic alcoholism are observed. One peculiar danger alleged to ether drinkers is that of setting themselves on fire, as, for example, in lighting a pipe.

It appears that very little is known by pathologists of the harmful effects on the tissues by chronic ether intoxication. Atrophy and sclerosis of the brain and of the liver, such as occurs in chronic alcoholism, have not been observed. It has been suggested that the detrimental effects will be more evident in the descendants of ether drinkers, the larger contingent of whom, in Ireland at least, is represented by robust men.

REFERENCES

Ewald, C. A.: Ein Aetheratmer, Berl. klin. Wchnschr., 1875, No. 10, p. 133.

Lewin, L.: The Untoward Effects of Drugs, translated by J. J. Mulheron, Detroit, 1883, p. 184.

Hart, E.: An Address on Ether Drinking, Its Prevalence and Results, Brit. Med. Jour., 1890, ii, 885.

Lewin, L.: Lehrbuch der Toxikologie, Vienna and Leipzig, Ed. 2, 1897, p. 180.

Kunkel, A. J.: Handbuch der Toxikologie, Jena, 1899, i, 429.

Hausmann, W.: Die Gewöhnung an Gifte, Ergebn. d. Physiol., 1907, vi, 94.

Calwell, W.: Ether Drinking in Ulster, Brit. Med. Jour., 1910, ii, 387.

Margarot, J., and Blanchard: Ethermanie et etherisme, Montpellier med., 1912, xxxv, 545.

ACTION OF HEXAMETHYLENAMIN

To the Editor:—1. In what conditions is hexamethylenamin indicated?

2. (*a*) If it requires a certain percentage of acid to break it up into formaldehyd, are the body fluids in cholecystitis and organic nervous diseases, as herpes zoster, acid? (*b*) If not, has it any therapeutic value in such conditions?

3. Why is it used after all penetrating injuries of the brain and cord and before all operations on them?

GERALD H. J. PEARSON, M.D.

ANSWER.—1. When it is desired to destroy or prevent the multiplication of micro-organisms in the urine.

2. (*a*) No. (*b*) Not so far as known.

3. When used in these conditions, it is on the false assumption that it can be active in tissues which are not acid in reaction. There is no evidence warranting its use in such conditions.

CAMPHORATED OIL IN ABDOMINAL SURGERY

To the Editor:—I should be much obliged for any information on the use of camphorated oil locally in the peritoneal cavity after abdominal interventions.

E. F. RODRIGUEZ, M.D., Sagua la Grande, Cuba.

ANSWER.—The following articles may be referred to:

Momburg: Injury from Injection of Oil into Peritoneum, *Deutsch. med. Wchnschr.*, March 20, 1913; abstr., THE JOURNAL A. M. A., May 3, 1913, p. 1404.

Belcher, A.: Camphorated Oil in Peritonitis, *München. med. Wchnschr.*, June 10, 1913.

Hoehne, O.: Intraperitoneal Application of Camphorated Oil, *München. med. Wchnschr.*, April 16, 1912.

Vignard, A., and Arnaud, L.: Camphorated Oil in Treatment of Peritonitis, *Rev. de chir.*, May, 1912; abstr., THE JOURNAL A. M. A., July 6, 1912, p. 72.

Von Seuffert: Intraperitoneal Injection of Oil, *Monatschr. f. Geburtsh. u. Gynäk.*, May, 1912; abstr., THE JOURNAL A. M. A., July 6, 1912, p. 76.

REMOVAL OF RUST FROM INSTRUMENTS

To the Editor:—A correspondent asks for a solution to prevent instruments from rusting (THE JOURNAL, Jan. 2, 1915, p. 72). If among instruments he includes hypodermic needles, there is nothing more serviceable to prevent rusting and consequent plugging than equal parts of almond oil and alcohol. This may be kept in a covered glass dish or a wide-mouthed bottle, and the needles allowed to remain in the solution when not in use. They may easily be removed with tissue forceps, the oil allowed to drain, and what of it that remains in the caliber of the needles can be cleared out with a jet of alcohol. Solutions containing bacterins and vaccines seem especially prone to produce plugging of needles, and this annoyance can be prevented absolutely and the life of the needle indefinitely prolonged by the use of the almond oil-alcohol mixture.

BERNARD WOLFF, M.D., Atlanta, Ga.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

CALIFORNIA: Sacramento, Jan. 12, 1915. Sec., Dr. Charles B. Pinkham, 727 Butler Bldg., San Francisco.

ILLINOIS: Chicago, Jan. 13-15, 1915. Sec., Dr. C. St. Clair Drake, Springfield.

INDIANA: Indianapolis, Jan. 12-14, 1915. Sec., Dr. W. T. Gott, State House, Indianapolis.

IOWA: Des Moines, Jan. 19-21, 1915. Sec., Dr. Guilford H. Sumner, Capitol Bldg., Des Moines.

KANSAS: Topeka, Feb. 9-11, 1915. Sec., Dr. H. A. Dykes, Lebanon.

NEW MEXICO: Santa Fe, Jan. 11, 1915. Sec., Dr. W. E. Kaser, E. Las Vegas.

NEW YORK: Albany, Buffalo, New York, Syracuse, Jan. 26-29, 1915. Mr. H. H. Horner, Chief, Examination Division, State Education Bldg., Albany.

OKLAHOMA: Oklahoma City, Jan. 12-14, 1915. Sec., Dr. John W. Duke, Guthrie.

SOUTH DAKOTA: Pierre, Jan. 12, 1915. Sec. Dr. P. B. Jenkins, Waubay.

VERMONT: Montpelier, Jan. 11-13, 1915. Sec., Dr. W. Scott Nay, Underhill.

WISCONSIN: Madison, Jan. 12-14, 1915. Sec., Dr. John M. Beffel, 3200 Clybourn St., Milwaukee.

Preventive Medicine at the University of California

Following the inauguration of the work of the George Williams Hooper Foundation for Medical Research, for the maintenance of which $50,000 per annum is available, the University of California, Medical School, is contemplating the development of a course in preventive medicine which will lead to the degree of Graduate in Public Health. To secure this degree it is planned that students must have satisfactorily completed one of the three following courses:

(*a*) The four years' course in the college of Letters and Science, beginning with the junior year, two years counting toward the degree of A.B., to be followed by two years of graduate work; or

(*b*) A two years' course in the Graduate School following the receiving of the degree of B.S. by students who have completed the four-year undergraduate curriculum in sanitary engineering; or

(*c*) A course for students in the University of California, Medical School, beginning in the second half of the fourth year (that is, the second graduate year) of the regular curriculum in the Medical School, and continuing for a year and a half to the end of the third graduate year, at which time the degree of M.D. in the Medical School and the degree of Graduate in Public Health in the College of Letters and Science would be conferred.

There are now nine medical colleges which have established graduate courses in public health.

Hospital Intern Year Required

A letter from the dean of Northwestern University Medical School states that at the quarterly meeting of the board of trustees, held recently, the recommendation of the medical school was adopted, that an additional year of hospital work be made part of the medical work for the course for students entering for the session of 1915 and thereafter. This is the fifth medical school to adopt this requirement. The complete list and the sessions when the requirement became effective, or will become effective, are as follows:

	Session of
University of Minnesota Medical School	1910-11
Leland Stanford Jr. University School of Medicine	1914-15
Rush Medical College (University of Chicago)	1914-15
University of Vermont College of Medicine	1915-16
Northwestern University Medical School	1915-16

One state licensing board, that of Pennsylvania, now requires that every candidate to be eligible for a license to practice medicine in that state must have served at least one year as an intern in an approved hospital. The requirement became effective in 1914.

California June Report

Dr. Charles B. Pinkham, secretary of the Board of Medical Examiners of the State of California, reports the written examination held at Los Angeles, June 16-19, 1914. The

total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 88, of whom 60 passed, including 11 drugless practitioners, and 28 failed, including 16 drugless practitioners. One hundred and nine candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
California Eclectic Medical College (1914) 75, 76.8, 78.2, 78.9, 82.7.		
College of Medical Evangelists	(1914)	78.4, 89
College of Phys. and Surgs., Los Angeles	(1913)	84.8, 88.2; (1914) 75, 75, 76.9, 81.3, 82.7, 82.9, 83.1, 83.2, 83.7, 85, 86, 86, 86.8, 86.9, 87.2, 87.5, 87.8, 89.2, 89.4, 89.4, 90.2, 90.3, 90.4, 90.4, 91.3, 92.
Hahnemann Medical College of the Pacific	(1914)	75.4, 86.7
Leland Stanford Junior University	(1914)	79.1, 80.5
University of California	(1913)	89.4; (1914) 76.9, 87, 87.9, 87.9, 88.
Johns Hopkins University	(1913)	83.3
Harvard University	(1912)	87
Trinity University	(1901)	76.7
Royal University of Parma, Italy	(1900)	89.1

FAILED

College	Year Grad.	Per Cent.
California Eclectic Medical College (1914) 68.2, 71.9, 72.4.		
College of Medical Evangelists	(1914)	73
College of Physicians and Surgeons, Los Angeles	(1914)	72.5
Cooper Medical College	(1903)	73.2
College of Med. and Surg., Physiomedical, Chicago	(1911)	30.9
St. Louis College of Physicians and Surgeons	(1910)	70
Eclectic Medical College, Cincinnati	(1913)	70.9
Medico-Chirurgical College of Philadelphia	(1912)	63.2
Meharry Medical College	(1913)	67.8
Queen's University	(1884)	41.3

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
California Eclectic Medical College	(1913)	Nevada
University of Southern California, Coll. of Med.	(1908)	Nebraska
University of Colorado	(1907)	Colorado
Georgetown University	(1904)	Arizona
George Washington University	(1909)	Illinois
American College of Medicine and Surgery	(1903)	Illinois
Bennett College of Eclectic Medicine and Surgery	(1874)	Illinois
Chicago College of Medicine and Surgery	(1913)	Nebraska
Chicago Homeopathic Medical College	(1899)	Iowa
Chicago Physiomedical Institute	(1886)	Michigan
College of Physicians and Surgeons, Chicago	(1884)	Michigan; (1899) Colorado; (1901) Iowa; (1903) Illinois; (1905) Montana; (1906) (1912) Illinois.
Hahnemann Medical College and Hospital, Chicago	(1901)	Wisconsin
Northwestern University	(1894) (1902) (1904) (1907)	Illinois
Rush Medical College	(1871) (1881) (1883)	Illinois; (1892) Iowa; (1896) Missouri; (1904) Wisconsin; (1906) (1907) Arizona; (1908) Colorado; (1909) Illinois; (1910) Missouri; (1913,3) Illinois.
Indiana University	(1910) (1911)	Indiana
Sioux City College of Medicine	(1902)	Iowa
State University of Iowa College of Medicine	(1892)	New York
Eclectic Medical University, Kansas City, Kan.	(1908)	Kansas
Kansas Medical College	(1903)	Kansas
Kentucky School of Medicine	(1905)	Arizona
Louisville Medical College	(1906)	Texas
Medical School of Maine	(1905)	Maine
Baltimore Medical College	(1909)	Arizona
College of Physicians and Surgeons, Baltimore	(1890)	Nebraska; (1904) Pennsylvania.
Johns Hopkins University	(1904)	New York; (1911) Maryland
University of Maryland	(1903)	Maryland
Detroit College of Medicine	(1893)	Arkansas; (1897) Wisconsin
Detroit Medical College	(1885)	Michigan
University of Michigan, Department of Medicine and Surgery	(1873)	Nevada; (1880) Iowa; (1896) North Dakota; (1909) (1911) (1912) (1913,2) Michigan.
Hamline University	(1905)	Washington
University of Minnesota	(1907,2)	Minnesota, South Dakota.
American Medical College	(1892)	Missouri
Barnes Medical College	(1899)	Colorado; (1907) Oklahoma
Homeopathic Medical College of Missouri	(1869)	Missouri; (1887) Pennsylvania.
Kansas City Medical College	(1897)	Missouri
Missouri Medical College	(1898)	Indiana
St. Louis University	(1908)	Illinois; (1914) Missouri
Washington University	(1908,2)	Missouri
Omaha Medical College	(1892)	Nebraska
University of Nebraska	(1907)	Iowa
Bellevue Hospital Medical College	(1882)	New York; (1889) Indiana
College of Physicians and Surgeons in the City of New York	(1896)	New Mexico; (1898) New York.
Columbia University	(1912)	New York
Cornell University	(1903)	New York
Long Island College Hospital	(1891)	New Jersey; (1896) New York
New York Homeo. Medical Coll. and Flower Hosp.	(1910)	Washington
University of Buffalo	(1874)	Iowa
University of the City of New York	(1887)	Pennsylvania; (1890) Colorado.
Eclectic Medical College, Cincinnati	(1890)	Kansas; (1903) Washington
Medical College of Ohio	(1908)	Ohio
Miami Medical College	(1903)	Illinois
Ohio-Miami Medical College	(1913)	Ohio
Starling-Ohio Medical College	(1910) (1912)	Ohio
Western Reserve University	(1883)	Montana; (1908) Ohio
Hahnemann Medical College and Hosp., Philadelphia	(1880)	Nebraska
Jefferson Medical College	(1879)	Oregon; (1881) Pennsylvania; (1895) Wyoming; (1904) Pennsylvania.
Medico-Chirurgical College of Philadelphia	(1890)	Penna.
Western Pennsylvania Medical College	(1902)	Penna.
Tennessee Medical College	(1908)	Tennessee
McGill University	(1888)	Ontario
Royal University, Christiania	(1906)	Washington

Rhode Island October Report

Dr. Gardner T. Swarts, secretary of the Rhode Island State Board of Health, reports the practical and written examination held at Providence, Oct. 1-2, 1914. The total number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 80. The total number of candidates examined was 10, of whom 9 passed and 1 failed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
College of P. and S., Baltimore	(1914)	93.2
Boston University	(1914)	88
Harvard University	(1908)	86.7
Tufts College Medical School	(1907)	88.4
Medico-Chirurgical College of Philadelphia	(1914)	84.5
University of Vermont	(1914)	84.5, 85.5
Montreal School of Medicine and Surgery	(1912)	80.2
Royal University of Naples	(1891)	86

FAILED

College	Year Grad.	Per Cent.
Meharry Medical College	(1914)	72.5

Book Notices

DISEASES OF THE SKIN, INCLUDING THE ACUTE ERUPTIVE FEVERS. By Frank Crozer Knowles, M.D., Instructor in Dermatology, University of Pennsylvania. Cloth. Price, $4 net. Pp. 546, with 213 illustrations. Philadelphia: Lea & Febiger, 1914.

This book belongs to the manual class of text-books; it is midway between the quiz-compend and the complete treatise. A successful manual in dermatology should appeal to a large group of students and practitioners, and demands special skill and judgment in the selection and presentation of the subject-matter. The facts chosen from the vast field of dermatologic knowledge must be adequate without excess, and must be clearly and concisely set forth. The author in this instance has met these requirements in part, but not wholly. His selection of material to be presented is scarcely open to criticism, and good judgment is shown in the relative emphasis given the various subjects. The general scheme of presentation is excellent, and in certain respects original; and conciseness is observed in the discussions. There is present, however, a lack of clearness of statement in so many places as to suggest hasty preparation and careless proofreading. A few examples may be cited. In the first paragraph of the preface appears: "In order to make the book more complete, not only the exanthemata are included, but also the acute eruptive fevers that are constantly or occasionally accompanied by a dermal outbreak." In the text proper: "The exact cause of this affection is unknown, but it is probably of toxemic origin, either due to some intestinal toxin or of a bacterial nature." "Erythema multiforme is distinguished from urticaria by the more lasting character of the lesions, a few hours or minutes in the one and days in the other." "Pellagra is a constitutional disease exhibiting a cutaneous outbreak which is chiefly of the exposed surfaces, gastro-intestinal and nervous symptoms." "Erythema paratrimma is the title employed, now almost obsolete, to signify the resultant erythema from the pressure of the prone position preceding a bedsore." A scar, correctly defined in one place, is given elsewhere as "a new formation of skin which replaces tissue loss." Errors in grammatical and rhetorical construction and in the choice of words, while

detracting from the general effect of the whole, may not impair validity of statement and can easily be corrected in a subsequent edition. The author will find very few in agreement with him in his classification of Oriental sore under diseases caused by vegetable organisms (cocci). He is bold also in putting syphilis under the same category (spirilli), considering the prevailing opinion as to the *Treponema pallidum*.

A MEDICAL DICTIONARY FOR NURSES, Giving the Definition, Pronunciation and Derivation of Terms Used in Medicine, Together with Supplementary Tables of Weights, Measures, Chemical Symbols, etc., Arranged with Special Reference to Use by Nurses. By Amy E. Pope. Cloth. Price, $1 Pp. 288. New York: G. P. Putnam's Sons, 1914.

In addition to giving the definition, pronunciation and spelling of words, this book gives in many cases a description of the uses of substances and the course of diseases. For example: Under tuberculin, the various tuberculin reactions are described; under typhoid, after the statement that it is an infectious disease due to infection with the *Bacillus typhosus*, the symptoms are given and also the complications. The book also includes a list of abbreviations, a table of chemical symbols, a table of the elements, a classification of the poisons and their antidotes, frequently used prefixes and suffixes, tables of weights and measures, methods of reckoning the amount of drug necessary in making solutions, and a table of average composition of common American food products. There are errors, such as the use of "tubercular" for "tuberculous" and "apnoia" for "apnoea," which should be corrected in future editions.

DISEASES OF THE RECTUM AND ANUS. A Practical Handbook. By P. Lockhart-Mummery, F.R.C.S., Senior Surgeon to St. Mark's Hospital. Cloth. Price, $3 net. Pp. 348, with 102 illustrations. New York: William Wood & Co., 1914.

This is the newest of the many books in the field of proctology. It is a handy little volume divided into twenty-three chapters. Useless discussions are avoided, only such methods of treatment which the author has tested and found worth while are described, and in many instances illustrative cases are cited which add greatly to the value of the book. The medicinal treatment of each disease is discussed thoroughly and given preference over surgery when it should be, although the author is a surgeon of prominence. The many prescriptions given will prove useful to the general practitioner as well as to his patient who is seeking relief from his symptoms while taking other treatment under advisement. Much more might be said in praise of the book, but the points mentioned will suffice to indicate that it may be recommended as being worth while.

CALIFORNIA AND THE FAR WEST. Suggestions for the West-Bound Traveler. By K. E. M. Dumbell. Cloth. Price, 75 cents. Pp. 198. New York: James Pott & Co., 1914.

A better—at least a more descriptive—title for this book would be "Suggestions to Those Who Are Proposing a Trip to the Western Coast and Alaska." It mentions the six main transcontinental routes from the Atlantic to the Pacific coast, and gives brief descriptions of the important places—parks, glaciers, canyons, mountains, rivers, lakes, towns, etc.—that may be taken in on the different routes. The descriptions are not sufficiently full to deserve the designation, but must be regarded as suggestions only. There is a list of the principal hotels with rates, and a small map of the western states. The book will prove helpful to those who are arranging to go to the San Francisco and San Diego expositions, which includes those of our readers who expect to attend the next meeting of the American Medical Association. Its special helpfulness lies in the fact that it gives different points of interest on the various routes.

Periodical Examination and Preventive Medicine.—Preventive medicine in order to be of the greatest service to mankind must insist upon the medical examination of every citizen once or twice a year. It is the only thing which will reach the root of the evil.—Victor C. Vaughan, *Journal Michigan State Medical Society.*

Miscellany

Quarry Accidents in the United States in 1913

Although the number of deaths from accidents in quarries in the United States in 1913 was less by about 14 per cent. than for the year 1912, it is still unnecessarily high and does not compare favorably with the records of foreign countries. According to a recent report of the Bureau of Mines[1] the number of men employed in the quarry industry in 1913 was 106,278 as compared with 113,105 in 1912, but on account of the greater number of days worked in 1913 the record for that year exceeds by 800,000 days' labor the record of the previous year. The total number of men killed in 1913 was 183, a fatality rate of 1.72 per 1,000 as against 1.88 in 1912. In the coal industry among the 747,644 men employed in 1913 the fatality rate was 3.73 per 1,000 men employed, and in the metal mines among 193,088 men it was 3.54 per 1,000. It is to be expected that these rates would be higher than that of the quarries where the work is carried on chiefly or altogether in the open, yet it is interesting to note that the fatalities in the coal mines due to falls of roof, wall rock or coal in 1913 amounted to 45.38 per cent. of all fatalities, and in metal mines to 36.16 per cent., while in the quarries falls of rock or overburden caused 20.76 per cent. of fatalities, a seeming disproportion in consideration of the apparent risk.

It is said that the principal hazards of quarrying appear to be about equally divided with reference to explosives, falls of quarry material, and haulage. Accidents from these three causes are said to represent nearly two-thirds of all deaths. In France the mortality rate from quarry accidents is said to be about 1 per 1,000 men employed. In 1912 it was only 0.91. In Great Britain the average for ten years was about 1.09 per 1,000 men employed, and in 1913 it was only 1.05. The fatality rate in the United States in open quarries, with ample light and air and with no risk of roof falls, is said to be greater than in some of the coal or metal mines in foreign countries. This is attributed to less stringent regulations and less systematic inspection. Although percentages of serious and slight injuries are given, the uncertain method of rating or reporting injuries in the different states or in the quarries makes their exact value doubtful. A uniform method should be adopted, as advocated in the report.

Frontal Sinus Suppuration

Many cases of chronic suppuration of the frontal sinus may be permanently cured by intranasal treatment whereby the anterior and upper portion of the middle turbinate and some adjacent cells are removed. Many other cases, according to Lothrop (*Annals of Surgery*, 1914, lix, 937), will not yield to this treatment. The operations in present use are (1) intranasal and (2) extranasal.

Most authorities agree that the intranasal effort to enlarge the vicinity of the ostium of the sinus is attended with unnecessary risk. In the external operations the facial or orbital wall of the sinus or both are removed, and the more radical, such as the Killian operation, removes also a portion of the nasal process of the superior maxilla and lacrimal bone. These operations strive to obliterate the sinus and there is subsequent disfigurement, varying according to the type of operation.

The establishing and maintaining of adequate drainage is difficult because of the anatomic relations in the vicinity of the ostium. The principle of the Killian operation, Lothrop believes, is wrong because the bony support afforded by the nasal process of the superior maxilla and lacrimal bone is removed and thereby the soft parts are drawn in subsequently and thus the region is narrowed. In the smaller sinuses, provided the patient does not object to the deformity, the result may be satisfactory.

1. Quarry Accidents in the United States During the Calendar Year 1913. Technical Paper 92, U. S. Bureau of Mines.

The steps in Lothrop's operation are as follows: A small bony opening is made in the facial wall just above the nasal process; a small probe is passed through the ostium into the nasal cavity and left there while, by means of small curets at the start, and subsequently the use of burr drills, the neighboring anterior ethmoid cells and the nasal process of the frontal bone are removed; then the thickened mass of bone which exists at the region of articulation between the frontal bone above and the nasal bone, and the nasal process of the superior maxilla are so thinned as to leave only a thin shell. "This removal," says Lothrop, "can be accomplished only by means of burr drills introduced through the nose with the burr in sight through the opening in the facial wall." Furthermore, he believes that there is no objection and that it is advisable, even when only one sinus is involved, to break through the interfrontal septum and remove in the same manner the corresponding portion of the floor of that sinus. The removal includes also a portion of the nasal septum for a distance below the interfrontal septum. By this procedure a surprisingly large opening is obtained and an instrument entering either nostril can be passed into either sinus and swept across from one side to the other. The external wound is closed. Thus obstinate fistulas may be cured at once. As after all operations on the frontal sinus, a certain amount of subsequent intranasal treatment is necessary in order to control the growth of granulation tissue.

In cases in which, as a result of previous operations, the bony structures mentioned above have been extensively removed followed by excessive granulation tissue formation causing early obstruction, successful results have been obtained by epidermizing the sinus after the manner described in THE JOURNAL, July 25, 1914, p. 352.

Sanitary Survey of State

Surgeon Carroll Fox, U. S. P. H. S., Washington, who has been making a state-wide investigation of health conditions in Minnesota, has made a report which contains the following specific recommendations, looking toward increased efficiency on the part of the State Board of Health:

1. That it be raised to state department.
2. That all its subdivisions be housed in the same building.
3. An assistant director and two additional bacteriologists for the division of preventable diseases.
4. Division of the state into not less than 20 health districts.
5. Each district to have a physician trained in sanitary science, with an office and adequate assistance, including inspectors, nurses and clerks.
6. Such physician to hold office during good behavior, be paid salary and traveling expenses and forbidden to practice medicine or engage in any business to interfere with his official duties.
7. Such official to have full power to enforce laws and regulations within his jurisdiction, and authority over all county, city and town health officials.
8. His powers and duties to include notifications of cases of disease, inspection of dairies, creameries, etc.; schools and schoolchildren; investigation of nuisances; prevention of disease; registration of births and deaths, and other duties incidental.
9. Field organization to be mobile, so that a force can be concentrated in emergency in any part of the state.
10. Division of sanitation to be increased by five men, four of whom shall have had training in sanitary engineering and one of whom shall be an expert in analysis of water and sewage.
11. Division of state into four sanitary engineering districts.
12. Comprehensive regulations relative to water supplies and the disposal of sewage and refuse.
13. Hereafter all plans of public buildings to be submitted to state board of health as to sanitary arrangements, as required by law.
14. Law to require reporting of all marriages and divorces to state board of health.
15. Tabulating machines for division of vital statistics.
16. That the prevention of occupational diseases and the maintenance of sanitation in places employing labor be controlled by state department of health.
17. Resumption of work relative to school hygiene and child welfare.
18. Provision for distribution of free antitoxin where necessary.
19. Monthly bulletin for use in instructing public schoolchildren.
20. State to pay expenses of district health officers attending annual conference.
21. All officials of department to be full time men.
22. System of cost accounting.
23. More clerks and technical assistants.
24. Minimum appropriation of $270,000 for department of health.

Medicolegal

Physician Not Liable for Taking of Wrong Medicine

(Nicholson vs. Patrick (Ky.), 170 S. W. R. 20)

The Court of Appeals of Kentucky affirms a judgment for the defendant, a practicing physician at a mining camp, who not only prescribed, but compounded his medicines, as there was no drug store or pharmacist in the town. The court says that the defendant prepared for a man, who complained of a stomach trouble, a mixture of nux vomica and May apple root. The mixture was of a brown color and put into a 2-ounce bottle on which the defendant testified that he pasted a label with this written direction: "Take 5 drops in water after each meal." He also gave the directions verbally. A few weeks afterward, the man's wife, suffering from some menstrual disorder, consulted the defendant in his office, and he prepared for her a remedy of brown color, which was put into a 3-ounce bottle, but, without placing any label on the bottle, he told her the dose was a teaspoonful as needed. Then, one morning, after about half the contents of each bottle had been used, she poured out of the bottle which she thought contained her medicine a teaspoonful and swallowed it. Almost immediately, she went into convulsions, but had returned to consciousness by the time that the defendant had reached there. He assumed that she was suffering only from her female trouble, and, no doubt, attributed her marked improvement to the efficacy of his medicine, which she informed him she had taken. With her husband he went to his office and sent back some pills. On returning, the husband gave her another teaspoonful of medicine out of the same bottle from which she had taken the first dose an hour before, which all supposed was the bottle prepared for her a month before, because, as he wanted to testify, the defendant told him to give her another dose of her medicine, and, in about fifteen minutes, the pills. But the medicine again threw her into convulsions, and this time the defendant discovered that she had been taking, by the teaspoonful, the nux vomica and May apple root, the bottle not having any label on it. Whether the defendant did or did not place a label on the bottle of poison was the question on which the case was submitted to the jury, and they returned a verdict for the defendant. Nor was it error that the trial court refused to permit the husband to testify. The question in the case, as it was prepared in the lower court, was whether the bottle was labeled in the first place, and none of the testimony offered by the husband could affect that question, except as to what occurred in the defendant's office when he received the bottle, and, as he got that for himself, his evidence about it was clearly incompetent. It did not come within code exception which provides that when a husband or wife is acting as agent for his or her consort, either of them may testify as to any matter connected with such agency.

Manufacturing of Evidence by Physician a Punishable Offense

(Melton vs. Commonwealth (Ky.), 170 S. W. R. 37)

The Court of Appeals of Kentucky reverses a conviction of criminal contempt, but holds that Melton was, under the evidence for the commonwealth, guilty of the common-law offense of obstructing justice, and for this offense he could have been indicted by the grand jury, and on his trial, if proven guilty, under the rules of law and evidence that obtain in criminal practice; the jury could have assessed his punishment at a fine in any amount or imprisonment for any length of time, or have both so fined and imprisoned him. The information filed charged that one Collins having driven an ice wagon which came into collision with an automobile, certain attorneys endeavored to persuade him that he was injured, when he said he was not, and insisted on his submitting to an examination by the accused, who discovered a small bandage worn by Collins as a result of a slight accident sustained the day previous, and, in spite of Collins' explanation, rebandaged him, saying in substance that "they

don't know about that"; also subsequently bandaged him again. It further appeared from the record that the accused did not see or prescribe for Collins in a professional way, or give him any advice, or make to him any suggestions about his injury after suit was brought against the owners of the automobile, by the attorneys. According to Collins' version of the affair, the purpose of Melton was to fraudulently make up a state of facts that would enable him to maintain a suit to recover damages for an injury that he had not sustained. That he (Collins) afterward brought a suit to recover damages was not of controlling importance. The offense of Melton was complete when he attempted, by the methods described, to induce Collins to bring a suit. His purpose was to prostitute the administration of the law and make the courts an instrument of fraud and wrongdoing.

Refusal to Submit to Administration of Anesthetic for Examination

(Chicago, Rock Island & Gulf Railway Co. vs. Pemberton (Tex.), 170 S. W. R. 108)

The Court of Civil Appeals of Texas holds that, after the plaintiff Pemberton had refused to submit to the administration of an anesthetic for the purpose of an examination, there was no error in the court refusing to appoint a committee of disinterested medical experts to examine him for the purpose of testifying as to the extent of his injuries and the probable duration thereof. The court says that while the plaintiff was testifying he pulled up his trousers leg, leaving an openwork drawers leg covering his limb. It was not shown that the outer surface of the knee disclosed any mark indicating the extent of injury, nor was its appearance in any way calculated to arouse the sympathy of the jury. It seemed that the only purpose for raising the trousers leg was that the grating sound made by the working of the knee could be more distinctly heard by the jury and others. No restrictions were placed on the examination other than the refusal to appoint a committee. One of the defendant's physicians had examined the plaintiff just before the trial began and testified in the case. Two of the physicians testified that, in order to make a more thorough examination, it would be necessary to place the plaintiff under an anesthetic. The plaintiff refused to submit to the administration of an anesthetic, and that was the main reason for refusing to appoint the medical committee. The plaintiff's refusal was not unreasonable, and there was no error in the court's ruling.

Care Required of Manufacturers of and Dealers in Food

(Parks et al. vs. G. C. Yost Pie Co. et al. (Kan.), 144 Pac. R. 202)

The Supreme Court of Kansas affirms a judgment for $3,000 damages for the death of a man alleged to have been caused by ptomain poisoning from eating a pie, or a portion thereof, which was manufactured by the defendant pie company and sold by it to a retail grocer who in turn sold and delivered it to the man as suitable food for himself and family. The court says that the degree of care required of a manufacturer or dealer in human food for immediate consumption is much greater by reason of the fearful consequences which may result from what would be slight negligence in manufacturing or selling food for animals. In the latter a higher degree of care should be required than in manufacturing or selling ordinary articles of commerce. A manufacturer or dealer who puts human food on the market for sale or for immediate consumption does so on an implied representation that it is wholesome for human consumption. Practically he must know it is fit, or take the consequences if it proves destructive. The usual rule by which the existence or absence of negligence is to be determined in a particular case is whether the care exercised was commensurate with the danger reasonably to be apprehended.

The Value of Partial Knowledge.—What cannot totally be known ought not to be totally neglected, for the knowledge of a part is better than the ignorance of the whole.—Ismail ibn Ali Abu el Feda (Preface to his Geography).

Society Proceedings

COLLEGE OF PHYSICIANS OF PHILADELPHIA

Meeting held Nov. 23, 1914

(Concluded from page 81)

Some of the Unusual Features of Tuberculous Meningitis

DR. THOMAS MCCRAE: The case was one of tuberculous meningitis in which symptoms had existed for eight weeks before death. There was a marked variation in the symptoms, the patient's mental condition changing from day to day. The eye symptoms were also very variable, paralysis being present one day and gone the next. Retraction of the head and Kernig's sign were not particularly marked. Lumbar puncture gave a clear fluid with a cell count of 100. Tubercle bacilli were not found. At necropsy only a few tubercles were found on the cerebral meninges, and there was little change in the meninges themselves. It seemed rather difficult at first to give an explanation of the symptoms when the necropsy findings were studied. The brain was hardened as a whole, and when sectioned three caseous areas were found in the occipital lobes. These contained large numbers of tubercle bacilli. In this case many of the symptoms were apparently due to general toxemia and not to the local tuberculous process in the meninges. The variation in the eye signs seemed most probably to be from edema. The lungs showed a large number of very young miliary tubercles, evidently much younger than those in the meninges. The source of infection was apparently a tuberculous epididymitis.

DISCUSSION

DR. WILLIAM M. L. COPLIN: The lesions in the gray and white matter of the brain of this case were old, with distinct caseation. It is possible that the extension of infection may have occurred from them to the meninges rather than by hemotogenous dissemination to the meninges, lungs and other organs. I am reminded of one case in which there was perfectly clear evidence of at least two eruptions of miliary tuberculosis. These were seen in the liver in the presence of definitely healed tubercles, and perfectly fresh granulations with absolutely no evidence of any reparative effort.

DR. JOSEPH SAILER: I recall a case of tuberculous meningitis in which after one or two years the patient died of some other condition and in which healed tuberculous lesions were found in the meninges.

DR. B. F. STAHL: In a case reported some time ago, the patient had tubercle bacilli in the spinal fluid, had all the symptoms of meningitis and in addition had tuberculosis of the lungs; and, if I remember clearly, he had a cavity. The patient made a surprising recovery from his tuberculous meningitis. I saw the patient four years afterward, and the disease was entirely arrested.

DR. DAVID RIESMAN: A woman, stout and healthy looking, presented continuous fever with intense headache. There was history of two separate attacks of typhoid. There was no positive Kernig's sign, but some rigidity of the neck. Lumbar puncture showed the spinal fluid to be almost typical of tuberculosis. Complete recovery took place. I recall the cases of two middle aged women who seemed to have typhoid fever. In the examination of one a little lump was discovered in the back, probably the result of an old Pott's disease. Subsequently all the symptoms of miliary tuberculosis developed and the patient died of that disease. In the second patient the picture was definitely that of typhoid. She had also a little enlargement in the back. This together with the headache suggested tuberculous meningitis, which the condition was subsequently proved to be. I feel, therefore, that these small lesions in the intestines, epididymis and in the joints are not infrequently the cause of a miliary tuberculosis or tuberculous meningitis. I would particularly point out that these little remnants of an old and forgotten Pott's disease are very interesting in diagnosis.

DR. ROBERT L. PITFIELD: In a case of meningitis, lumbar puncture showed tubercle bacilli, diplococci and pneumococci.

The edema of the face, choked disk and the fact that the complete coma was not relieved by lumbar puncture led me to think that possibly the cause of the comatose condition was a blocking up of the foramen of Monro and the overflow of fluid into the left ventricle. Dr. McCrae's case might be due to an accumulation of fluid as well as to the toxic condition mentioned.

DR. A. P. FRANCINE: I have seen three cases which developed many of the typical features of meningitis which remained for a definite period, and in which a diagnosis was made of tuberculous meningitis in the course of advanced pulmonary tuberculosis. All three cases cleared up without evidence of tuberculous involvement of the meninges or brain. I therefore look on these cases as possibly of nephritic origin or due to toxemia. I am rather skeptical of a tuberculous meningitis with recovery. I have seen recovery in such so-called cases, but there has been a complete absence of tuberculous meningitis.

DR. ALFRED STENGEL: I recall a woman with marked cerebral symptoms who soon developed a paralysis of the external rectus muscle in one eye with marked diplopia. There was retinitis with swelling of the nerve head. There were somnolence and various other nervous disturbances not terminating in coma. The condition had begun with apparently acute infection which we eventually discovered to be tuberculous. While tuberculous meningitis was not demonstrated, its suggestion was very strong and it might possibly have been a case of healed tuberculous meningitis. Another case was one in which there were all the symptoms of tuberculous meningitis in a young boy who had tubercles in the retina. There was complete recovery from the meningeal and retinal conditions. These two cases suggest the possibility of healed tuberculous lesions in the meninges.

I believe with Dr. McCrae that in tuberculous meningitis the symptoms are due, not to the local tuberculous process, but to the associated toxemia and perhaps to the vascular changes as well. Were the cerebral symptoms due to previously established organic lesions, the extraordinary changeability in these symptoms from day to day could hardly take place.

PHILADELPHIA COUNTY MEDICAL SOCIETY

Meeting held Dec. 9, 1914

The President, DR. WILLIAM DUFFIELD ROBINSON, in the Chair

SYMPOSIUM ON RETRODISPLACEMENT OF UTERUS

Gilliam Operation for Deviations of Uterus

DR. D. TOD GILLIAM, Columbus, Ohio: My operation is the pioneer ventrosuspension of the uterus by means of the round ligaments *in which the ligaments are left intact in their natural investments.* The many modifications of the original operation emphasize the value of its principle. The following is a description of the operation as I do it to-day: 1. An abdominal incision 3 or 4 inches in length is made in the median line at the usual site between the umbilicus and pubes. 2. The adhesions are broken up and the fundus brought forward. 3. By lifting up the broad ligament of one side on the tip of a finger applied to the posterior surface, the round ligament is brought into view and is picked up by a bullet forceps. 4. Selecting a point 1½ inches from the uterus, a thread is passed under the round ligament and the ends of the thread are brought out of the opening and secured in the bite of a clamp forceps which is laid on the surface of the abdomen. 5. The other ligament is sought for and secured in the same manner. 6. At a point about 1½ inches above the pubes, the peritoneum, muscle and fascia are caught up by a volsella and pinned together, care being taken that the edges of these layers are approximately in line. 7. Traction is now made, and with a claw retractor the skin and superficial fat are drawn in the opposite direction, and by a sweep of the knife the face of the fascia is laid bare. 8. With a Cleveland ligature carrier or some similiar instrument a stab wound is made from the surface of the fascia into the peritoneal cavity, 1 inch from the edge of the abdominal incision. The jaws are separated and by an outward movement of the handle brought into plain view at the large opening. The thread which loops the round ligament is now placed in the jaws, the clamp forceps removed and the ligature carrier withdrawn, bringing with it the thread and the ligament. 9. While the ligament is held taut, with its loop end just above the surface of the fascia, a catgut suture is passed through it, including the tissues on either side, then back again where it is tied. This is cut close to the knot, and the suspending thread removed, perferably by clipping it close to where it passes under the ligament, to avoid possible contamination. 10. The volsella and retractor being removed, the other side is dealt with in like manner and the incision closed.

After both ligaments have been fastened, the conditions are such that strangulation of the bowel is scarcely conceivable. The uterus rests easily and naturally on the bladder, from which it can be raised to a position a little short of vertical. So far as I know there has not been a single instance in which pregnancy or parturition has been embarrassed, and there have been no untoward results of any kind. In a few isolated cases in which it was averred that intestinal obstruction occurred, the condition should not be credited to the operation per se. The majority of the failures have been due to insecure attachment to the abdominal walls.

Operative Treatment of Retroversion of Uterus

DR. EDWIN B. CRAGIN, New York: In June, 1905, I turned to the principle of the Gilliam operation of shortening the round ligament. After performing two or three of these operations through a median incision, I adopted the Pfannenstiel incision because, among other reasons, of its simplicity of technic, the safety of the cicatrix and the cosmetic result. Because of an unsatisfactory anatomic result in one case, I have been careful since November, 1905, to perform the operation so that the loop of round ligament when sutured lies just beneath the fascia and does not perforate it. Since then I have had no further trouble with sloughing of the ligament. Any operation for retroversion of the uterus, to be called satisfactory, must be (1) safe, (2) permanent in its results, and, (3) must not interfere with pregnancy, parturition or the puerperium. Of 400 operations during the nine years ending last June, I lost one. This was a complicated case in which nothing but an intra-abdominal operation would have met the indications. In the series of 400 operations, there were 127 complicated cases.

Regarding permanence in results, in 164 cases heard from in the series of 400, and calling a uterus which lies in the axis of the vagina a partial anatomic failure, I have two partial anatomic failures, two complete anatomic failures, and two symptomatic failures, although anatomic successes. Among these 164 cases, pregnancy has occurred in 35, and without marked discomfort. Of the 35 women who became pregnant after the operation, 22 went to term and bore a living child; 1 has had two living children since the operation; 9 are now in the course of pregnancy, and 4 have had miscarriages induced or natural. Of these 4, 1 has had seven induced abortions since my operation; 1 has had two. One miscarried after a fall, and one had a miscarriage without assignable cause, but she had one living child before this miscarriage and since my operation, and is now advanced about four months in her third pregnancy. This gives one miscarriage after and one miscarriage without assignable cause in thirty-eight pregnancies, which does not seem a greater frequency than one would expect in women not operated on. One of these women became pregnant at once after leaving the hospital; another menstruated only once before becoming pregnant. In none of the patients who went to term have I been able to get any history of dystocia. The involution of the uterus has been normal. The absence of hernia in any of the cases heard from suggests that leaving the opening in the rectus just large enough for the round ligament loop makes the occurrence of hernia very improbable.

Surgical Treatment of Retroversion of Uterus with Special Reference to the Lower Pole

DR. J. WESLEY BOVÉE, Washington, D. C.: To select the proper corrective operation intelligently, an understanding of the forces maintaining the uterus in what may be called its normal position is essential. It hardly seems proper to rely entirely on shortening the round ligaments to correct retroversion of the uterus. I believe success will attend this procedure only when a strong ligament exists or is strengthened by plication and markedly shortening it. My views regarding operations for retroversion of the uterus are, briefly, as follows: 1. Round ligament shortening, per se, does not usually contain all required elements in the treatment of retroversion of the uterus, though it may end the displacement. 2. No single operation devised is more successful than is it. 3. The displacement is more certainly influenced by the ligamentation at the lower pole than by other forces, and, therefore, the proper adjustment of these forces is of paramount importance. 4. Without predilection for any particular operation, the exact cause or causes of the displacement must be sought and the indicated operation performed. 5. The vaginal route alone is not applicable, except in the roomy vagina of the multipara, or when the operation is limited to the anterior vaginal wall and broad ligament bases. 6. The round ligament shortening is often advisable as an adjunct to operation on the ligaments at the lower pole of the uterus.

Operative Treatment of Retrodisplacements of Uterus

DR. E. E. MONTGOMERY, Philadelphia: Modifying the Gilliam operation, a loop of round ligament has a ligature passed around it, the ends of which are threaded into a Deschamps needle. The ligament is seized with hemostats external to the point about which the ligature is thrown around it, an opening is made in the anterior surface of the broad ligament, and through this opening the needle carrying the suture is passed until it reaches the point where the peritoneum is reflected on to the anterior abdominal wall. Hugging the peritoneum, it is pushed through and brought out on the aponeurosis, unthreaded, and the ends of the loop secured with hemostats. A similar course is followed on the other ligaments. Holding the ends of the ligature tense, a pair of sharp pointed scissors closed are inserted along the ligature, slightly separated, when traction generally results in pulling the loop through. The fatty tissue is pushed back, exposing the aponeurosis of this loop, secured by chromic catgut sutures on either side, taking up the approximal and distal ends of the loop. I first performed this operation June 11, 1904, and have had in all 756 cases. In nearly all of these cases this operation has been a link in a chain of operations designed to correct various pathologic conditions associated with displacement. The principal operations in their order of frequency have been curettement, 632; appendectomy, 507; perineorrhaphy, 239; trachelorrhaphy, 175; amputation of cervix, 104; resection of ovary, 58, and anterior colporrhaphy, 56. I have had five deaths, all of which occurred prior to 1909. The last 400 cases have been without mortality.

The advantages of the operation are: 1. It is easily accomplished. 2. It leaves no injured surfaces to favor adhesions. 3. It affords support by structures capable of evolution and involution, and consequently, well calculated to stand the test of subsequent gestation.

Principles and Practice in the Surgical Treatment of Retrodisplacements of the Uterus

DR. J. CLARENCE WEBSTER, Chicago: I have endeavored to carry out certain principles: 1. The operation should restore the soft parts of the pelvis as nearly as possible to normal. 2. In the child-bearing period the operation should not introduce any factor which interferes with the safety of pregnancy and labor. 3. It should also be of such a character as to make it possible for the woman to bear children with the reasonable hope that there shall be no recurrence of the displacement. 4. The operation must be carried out so as to make thorough exploration of the pelvic cavity possible, so that all associated pathologic conditions may be dealt with. The technic employed must not cause such trauma as will give rise to after-trouble.

The anatomic relations of the uterus should constantly be borne in mind. I have long since abandoned all operative procedures carried out through a vaginal incision, such as shortening of the round or uterosacral ligaments, or vaginal or vesical fixation; also all procedures carried out by the abdominal route resulting in the slinging of the uterus from the abdominal wall by an artificial band, or in the pulling of the fundus toward the parietes by the shortening of the round ligaments. A damaged pelvic floor must always be repaired. This is the largest contributing factor to success. The abdomen should be opened by the suprapubic mesial incision, when the procedure is determined by existing conditions. In a typical uncomplicated case, I first carry out what is termed "shortening of the uterosacral ligaments," but what is really the making of new ligaments out of the peritoneum and subjacent tissue. I always use linen sutures in making these ligaments, to ensure development of fibrous tissue.

I then cause the fundus of the uterus to be directed forward to the pubes in its normal position, by shortening the round ligaments and stitching them securely to the upper part of the posterior surface of the uterus. The broad ligament is perforated with a curved forceps immediately under the utero-ovarian ligament close to the uterus. Emerging just above or behind the round ligament an inch or more (according to the length of the stretched ligament) from its uterine end, the forceps grasps the ligament and pulls it through the opening, doubling it on the back of the uterus. This bent portion is spread out as widely as possible, the smooth peritoneal surface being uppermost (superficial). The under surface is then stitched to the uterus with linen suture. The latter is completely buried, under the ligament, the edges of which are stitched to the uterus with catgut. The other round ligament is then similarly dealt with.

The next stage is important—the closing of the openings in the broad ligaments, stitching their edges to the round ligaments. When the uterus is large, the level of the utero-ovarian ligament abnormally low, or the outer ends of the round ligaments much thinned, I stitch the round ligaments with linen to the edge of the uterus immediately in front of and above the opening made in the broad ligament. When the operation is accompanied by the removal of a tube or tube and ovary on one side, the round ligament is shortened on this side by doubling it back directly without perforating the broad ligament, care being taken to cover all raw surfaces. In bilateral removal this is done on both sides. In the after-care, all forms of strain on the stitched parts must be avoided for several months. Pregnancy should not be allowed to commence until a year has elapsed, and then it is advisable that a vaginal pessary should be worn during the first three months. After the eighth week of the puerperium it is a wise precaution to use a Hodge or Albert Smith pessary for several months.

Modification of the Alexander Operation

DR. BARTON COOKE HIRST, Philadelphia: I still believe in the treatment of retroversion of the uterus. When a woman comes to me with the train of symptoms attending this condition, and I cure her retroflexion, at the same time giving her symptomatic relief, I feel that I have done her some good. Only within the last two years, however, have I felt satisfied with my operative method. I submit that the ideal operation for retroversion of the uterus is (1) one that will restore the uterus to its natural position; (2) give the patient symptomatic relief; (3) withstand the strain of subsequent pregnancies; (4) does not complicate subsequent pregnancies or labor; (5) and causes no subsequent complications such as obstruction of the bowels. Conditions one and two are met by shortening of the round ligaments. Regarding the third requirement, in over twenty years' experience, the Alexander operation has given the smallest number of recurrences; and, what is particularly important, among the few failures, not one, to my knowledge, has followed subsequent child-bearing. In one case there were five childbirths; in another case four, and not one patient has yet reported co-

plications. The Pfannenstiel operation also obviates the defect of overlooking intra-abdominal complications. The detailed technic of the operation is best described by reference to a series of illustrations. The withdrawal of the round ligament for a sufficient length is a point on which many surgeons go astray. A single stitch of No. 3 catgut is used temporarily to suspend the uterus and to take the strain off the round ligaments. Incision of the peritoneum exposes to view the abdominal organs. The uterus is seized by a Summers' clamp, which is a convenient instrument. Closure of the peritoneal incision occupies only a few minutes. Then the round ligaments are fastened by a series of sutures to Poupart's ligament. The fascia is united and the skin is closed as in an ordinary abdominal section.

Discussion on Retrodisplacement of Uterus

DR. J. M. BALDY, Philadelphia: The details of the operation bearing my name have been given in the main in the paper by Dr. Webster. As a matter of historic interest, great injustice has been done Andrews of Chicago, who did practically this operation a year prior to the work of Dr. Webster and myself. If retrodisplacement causes the symptoms for which we operate, then any operation that will replace the uterus will cure those symptoms. The trouble is that too much prominence is given to retrodisplacements, and patients are operated on who ought never to be touched for retrodisplacement. Instead of bothering ourselves about what each one is doing perfectly, we should replace the uterus, if that is causing symptoms, and keep it replaced by any satisfactory method that will cure the symptoms. As a matter of fact, in nine out of ten cases the symptoms do not come from it at all. It is the complications that are causing the symptoms.

DR. HOWARD A. KELLY, Baltimore: The history of retrodisplacements of the uterus may be divided into four periods:

1. The Ancients down to about the year 1600. Prolapse was recognized, but otherwise little was known of displacements which were confused with wanderings of the uterus into various other parts of the body and various imaginary conditions, such as dryness, softness, distortion and compression.

2. From 1600 to about 1810. During these years there was an increasingly clear recognition of the extreme danger of retroflexion of the pregnant uterus. William Hunter, in 1774, reports a case treated by emptying the bladder, putting the patient in the knee-chest posture, and endeavoring to replace the uterus by using the fingers of one hand in the rectum, pushing in the sac, and those of the other hand in the vagina manipulating the cervix. The patient died and a post-mortem showed that the womb was so tightly wedged in the pelvis that the symphysis had to be divided to get it out. During this period the method of examination was the introduction of a finger into the vagina, technically called the "touch." Retroflexion apart from pregnancy had to be defined as "retroflexion in vacuity." The first case reported in this country was by Dr. Holyoke of Salem, Mass., in 1806.

3. From 1810 to 1885. It now became increasingly evident that retrodisplacements were common. Sir James Y. Simpson almost felt as if he had discovered them with his uterine sound. A number of works in this period were devoted to the subject, among which I would mention especially that of Laroux, published in 1844. This may be called the pessary period of gynecology, when great reputations were made by the invention of a new pessary, and when pessaries were patented and even hawked from door to door.

4. The last, or operative period. This began in the eighties of the last century, when the profession finally broke away from the dominion of the pessary and brought retroflexion operations into the category of other gynecologic procedures which were rapidly becoming almost exclusively surgical. Since that date the pessary has occupied a very subordinate place.

As to the frequency of retroflexions, at the Johns Hopkins Hospital out of 13,600 gynecologic cases, there were 1,886 of retroflexion. Of these, 415 were uncomplicated. Of 1,000 operations of all kinds performed there between Aug. 27, 1904, and Nov. 9, 1905, there were ninety-five cases of retroflexion. My own operation, which was done in 1885 and published January, 1887 (*Am. Jour. Obst.*, xx, 33), I have abandoned after doing it between 700 and 800 times, on account of the occasional accidents or a difficult birth. I now use an operation by which a single silk or linen thread on either side encircles the round ligament and draws it forward to the abdominal wall, where these are tied to the deep fascia over the rectus muscles. The peritoneum between the abdominal wall and the ligament must be picked up at every half inch, in order not to leave a hole for the bowel to slip through. I have done this eighty times and believe it will prove to be the most satisfactory operation yet devised.

DR. JOHN G. CLARK, Philadelphia: The point made by several of the speakers, that the retrodisplacement many times causes no symptoms, is one of the strongest arguments for any operation that gives a liberal insight into the abdominal cavity, so that all complicating conditions may be corrected.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

December, LXX, No. 6, pp. 865-1083

1 New "Efficiency" Systems and Their Bearing on Gynecologic Diagnosis. R. L. Dickinson, Brooklyn.
2 Freiburg Method of Dämmerschlaf or Twilight Sleep. W. H. W. Knipe, New York.
3 *Specificity of Placental Proteins in Skin Reactions of Human Body. F. H. Falls and F. K. Bartlett, Chicago.
4 *Experiments on Etiology of Eclampsia. E. T. Hull and G. L. Rohdenburg, New York.
5 *Resection of Ovaries. A. Goldspohn, Chicago.
6 *Repair and Reconstruction of Bile Ducts. J. H. Jacobson, Toledo, O.
7 Case of Pyloric Stenosis in an Infant Operated on by Method of Dr. John W. Keefe. C. L. Bonifield, Cincinnati.
8 Abdominal Drainage. J. W. Keefe, Providence, R. I.
9 Treatment of Urinary Calculi as Based on Their Chemical Composition. C. B. Schildecker, Pittsburgh.
10 Bacteriologic Findings in Urine in Cases of Kidney Ptosis. D. Hadden, Oakland, Cal.
11 Appendicitis as Cause of Cecal Stasis. H. O. Pantzer, Indianapolis.
12 *Plastic Operation for Correction of Ceco-colon Stasis. E. Marvel, Atlantic City, N. J.
13 *Longitudinal Inversion of Colon; Step in Short-Circuiting Operation. R. T. Morris, New York.

3. **Placental Proteins in Skin Reactions.**—Falls and Bartlett found that proteins prepared from the placenta in this way, or whole placenta when introduced by the von Pirquet intracutaneous or subcutaneous method, do in most cases cause a local reaction in pregnant and non-pregnant individuals. The difference in the reaction, however, is neither great nor constant enough to be of value in the diagnosis of pregnancy. This the authors claim speaks against the theory that the pregnant woman is specifically sensitized to placental proteins. The lack of a general anaphylactic reaction also speaks against the view that the pregnant woman is in fact a sensitized woman.

4. **Experiments on Etiology of Eclampsia.**—Hull and Rohdenburg are of the opinion that eclampsia develops in the following sequence: An overload of fetal elements is thrown into the circulation and, whether in the circulation or not, is autolyzed with the formation of an excess of leucin. The excess of leucin injures the hepatic vessels with consequent thrombosis, cloudy swelling, local necrosis, and more or less complete autolysis of the liver cells. The renal changes are probably due in part to other products of autolysis, and, perhaps, also the protein fractions incompletely broken down by the liver. The surprising feature of the process is the extent to which the liver may be damaged experimentally before clinical symptoms appear in the animals. Judging from analogy, such may well be the case in the human subject. The hemorrhages and the convulsions

Hull and Rohdenburg believe to be due not to extensive hepatic changes, but to the renal lesions. It appears from Hull and Rohdenburg's experiments that albuminuria is an important sign, since severe renal degeneration seems to be the important lesion. The urines of the experimental animals contained enormous quantities of albumin and all varieties of casts, even though there were but slight gross and microscopic changes in some of the kidneys. The experiments further suggest that a negative protective ferment in a known pregnant female and a determination of the leucin content of the blood will prove to be diagnostic procedures of value. The authors suggest that it is possible that a negative reaction so frequently noted in eclampsia, both in man and animals, is due to the inhibition of the activity of the ferments by an excess of their own products.

5. Abstracted in THE JOURNAL, Oct. 17, 1914, p. 1418.

6. Abstracted in THE JOURNAL, Oct. 10, 1914, p. 1320.

12. **Plastic Operation for Correction of Ceco-Colon Stasis.** The operation devised and employed successfully in three cases by Marvel aims to elevate the cecum and reduce the retention capacity of the ascending colon. It restricts the caliber of the colon and eliminates the cecal pouch. This is accomplished by approximating two of the three longitudinal fibrous bands which enter into the formation of the colon wall in such manner as to invaginate that part of the bowel lying between. The appendix having been removed and the stump invaginated and covered, the most dependent point in the anterior fibrous band is caught by a Lembert suture of non-absorbable thread, which suture is carried sufficiently high for its attachment in the external band that when tightened the bottom of the cecum is brought to a level with the ileocecal juncture. Sufficient interrupted Lembert sutures are then placed to completely approximate these two bands in line of their course from their origin at the base of the appendix to the site of the first suture. Additional sutures of the same type are placed above the first suture to the point in which the caliber of the colon ceases to be dilated or to the hepatic flexure. A continuous suture is then placed bringing the serosa over the interrupted suture, thereby reinforcing the approximation by an additional line of union.

13. **Longitudinal Inversion of Colon.**—In redundant sigmoid cases after making anastomosis for short-circuiting, instead of cutting out superfluous sigmoid, Morris attempted to lessen the degree of traumatism by painting this bowel longitudinally with iodin, and then running a suture in such a way that when it was drawn it would bury the painted part longitudinally. This transformed the redundant part into a narrow "rope," and dependence was placed on the iodin for causing strong adhesion. The idea is to do away with the severity of the operation of colectomy.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

December, II, No. 6, pp. 357-427

14 Human Filariasis (F. Loa Guyot and F. Bancrofti Cobbold). A. J. Smith and D. Rivas, Philadelphia.
15 Analysis of Thirty-Seven Fatal Cases in which Pellagra Existed Alone or in Association with Other Diseases. H. C. Clark, Ancon, C. Z.

Boston Medical and Surgical Journal

December 17, CLXXI, No. 25, pp. 915-954

16 Significance and Effect of Pain. J. M. T. Finney, Baltimore.
17 Community Health. G. M. Katsainos, Boston.
18 Critical Defervescence in Typhoid. E. J. Wood, Wilmington, N. C.
19 *Present Status of Crotalin in Treatment of Epilepsy. D. A. Thom, Palmer.

19. **Present Status of Crotalin in Treatment of Epilepsy.**—After selecting 203 cases free from any clinical evidence of organic brain lesions, Thom began to study the coagulability of the blood in epileptics. Blood was taken for this purpose before, during and after convulsions; 92 per cent. of these cases fell within normal limits, 5.5 per cent. was less than the minimum limit, and 2.5 per cent. over the maximum limit. Thom became convinced there was no relation between the coagulation time of the blood and convulsions in epileptics.

Fourteen cases of idiopathic epilepsy were started on crotalin with the intention of continuing for three months. On three of these patients it was necessary to suspend treatment; in the first case because of the development of hysteric attacks; in the second the convulsions were so markedly increased in frequency and severity that at the patient's request treatment ceased; the third case exhibited such violent local and systemic reactions that Thom did not feel justified in continuing the injections. Of the remaining eleven cases which were kept on treatment for the three months, six became worse, that is, the convulsions were either increased in frequency and severity or some unusual mental disturbance made itself manifest; four showed no change whatsoever; and one, a typical case of hystero-epilepsy, showed improvement, undoubtedly the psychologic effect of the administration rather than the drug being the cause. From Pennsylvania, Virginia and Michigan, with his own personal work, Thom gathered fifty-eight cases. Six, or less than 10 per cent., showed improvement; twenty, or more than 35 per cent., became worse, and three died while treatment was being carried out. The remaining twenty-nine cases were apparently unaffected by the drug.

Bulletin of the American Academy of Medicine, Easton, Pa.

December, XV, No. 6, pp. 313-388

20 Hygiene and Machinery Hazards. C. T. Graham-Rogers, New York.
21 Measuring Cost of Child Labor. A. J. McKelway, Washington, D. C., and O. R. Lovejoy, New York.
22 Causes of Morbidity and Mortality in Industrial Parturient Woman and Measures for Improvement. E. E. Montgomery, Philadelphia.
23 Fatigue as an Element of Menace to Health in Industries. L. D. Bulkley, New York.
24 Light in Industries. E. Jackson, Denver.
25 Heat and Ventilation. J. Rooch, Trenton, N. J.
26 Crowding in Relation to Health of Working People. C. R. Henderson, Chicago.

Canadian Medical Association Journal, Toronto

December, IV, No. 12, pp. 1045-1140

27 Selection of Anesthetics Sequences and Methods. F. W. Nagle, Montreal.
28 Chloroform Anesthesia. J. Stewart, Halifax.
29 Roentgen Ray Evidences of Gastric Carcinoma. J. T. Case, Battle Creek, Mich.
30 *Complement Fixation Test in Gonorrhea. J. J. Ower, Montreal.
31 *Injuries of Foot: With New Method of Reducing Dislocation of Big Toe. M. Chisholm, Halifax.
32 Prenatal Care of Obstetric Cases. J. R. Torbert, Boston.
33 Tuberculosis of Spleen. J. Halpenny, Winnipeg.

30. **Complement-Fixation Test in Gonorrhea.**—Tests were made by Ower on 375 human sera, in 218 of which the presence of a gonorrheal infection was known or suspected. Six strains of gonococcus were used in the polyvalent antigen. The results were as follows: Acute urethritis with symptoms present for ten days or less, and with gonococci in smears, 21 cases, all negative. Acute urethritis of three to six weeks' duration, 17 cases, 9 weakly positive, 8 negative. Chronic urethritis of over six weeks' duration, 22 cases, 13 positive, 9 negative. Epididymitis: (a) 19 cases with definite history of urethritis; 15 positive, 4 negative. (b) Four cases with no history of urethritis, all negative. Two were operated on later and found to be tuberculosis. One gave a positive Wassermann reaction.

Prostatovesiculitis, 40 cases, the majority of which were chronic and resisting treatment; 22 positive, 18 negative. Arthritis: (a) Acute, with no history of urethritis and clinically of type of acute rheumatic fever; 10 cases, all negative. (b) Acute with history of recent urethritis; 8 cases, all positive. (c) Chronic: Eight cases (female), clinically gonorrheal arthritis; 6 positive, 2 negative. Eleven cases, with no definite history or indication of gonorrhea; 3 positive, 8 negative. Colliculitis; diagnosed by urethroscopic examination; 7 cases, all negative. Stricture: 3 cases, all negative. These cases had not had symptoms of gonorrhea for over ten years previously. Conjunctivitis: 1 case of acute conjunctivitis of the right eye showing gonococci in smears, gave a positive reaction. Salpingitis; 23 cases, showing symptoms of acute or chronic inflammation of the fallopian tubes; 14 positive, 9 negative. Of these negative cases, 4 ...

operation were found to be tuberculous; 1 showed both tubercle bacilli and gonococci in smear, and a culture of the latter was obtained.

In addition to the above, serums were examined from eight cases in which gonococcus vaccine had been administered. These all gave positive reactions. In 130 serums the tests were performed, using both a monovalent and a hexavalent antigen. The latter was found to give on the whole distinctly better results. With it four cases were positive which were negative with the monovalent antigen. In those serums in which both antigens gave positive reactions, the hexavalent gave almost without exception the stronger reaction. An analysis of the cases seems to show that the best results are obtained in cases in which the lesions occupy sites in which there is possibly a lack of free drainage.

31. **New Method of Reducing Dislocation of Big Toe.**—Chisholm's method is to cut the extensor of the toe, then to hyperflex it, and pull it while in this position. In this maneuver the first phalanx acts as a pry with the head of the metacarpal bone as a fulcrum. The pry disengages the heads of the flexor brevis pollicis, the abductor and adductor pollicis, the long flexor tendon and the capsule. When this is done a slight pull in the hyperflexed position and direction makes the phalanx slip into position over the head of the metacarpal bone, carrying all the displaced structures with it. Suture the divided tendon and close the flap raised in exposing it.

Colorado Medicine, Denver

December, XI, No. 12, pp. 445-480

34 Fish and Shell-Fish Poisoning. C. B. Van Zant, Denver.
35 Meta or Parasyphilis. G. A. Moleen, Denver.
36 Management of Simple Fractures. L. M. Van Meter, Denver.

Illinois Medical Journal, Chicago

December, XXVI, No. 6, pp. 567-636

37 Alcohol in Medical Practice. W. C. Bouton, Waukegan.
38 Typhoid Vaccination. E. C. Pratt, Kankakee.
39 Possible Functions of Municipal Laboratories. E. Bartow, Urbana.
40 Certified Milk. R. R. Ferguson, Chicago.
41 Milk Problem. M. W. Snell, Litchfield.
42 Cystoscopic and Microscopic Diagnosis of Genito-Urinary Diseases. W. Wilhelmj, East St. Louis.
43 Leukocytes and Antitoxins. W. A. Wiseman, Camargo.
44 Kidney Infections. J. C. R. Wettstein, Effingham.
45 Acute Ulcerative Colitis. H. A. Haskell, Jacksonville.
46 Abortion, Cause, Prophylaxis and Treatment. J. M. Mitchell, Oblong.
47 Newer Methods of Diagnosis and Treatment of Gastro-Intestinal Diseases—Large and Small Intestines. F. J. Lesemann, Chicago.

Indiana State Medical Association Journal, Fort Wayne

December, VII, No. 12, pp. 551-608

48 Teaching of Neurology and Psychiatry in Indiana. A. E. Sterne, Indianapolis.
49 Lymphosarcoma and Kindred Diseases. Report of Case. P. H. Linthicum, Evansville.
50 Ether, Its Inflammability and Explodability; Its Administration and Its Effects on Lungs and Kidneys. L. F. Schmauss, Alexandria.
51 Practical Considerations of Modern Ideas in Oto-Laryngology. J. D. Heitger, Bedford.
52 *Diagnosis and Surgical Treatment of Goiter. G. Link, Indianapolis.

52. **Diagnosis and Surgical Treatment of Goiter.**—Link's experience in thyroid surgery covers twenty-seven operations done on twenty-one patients. These patients all suffered from thyrotoxicosis except two. Of these twenty-seven operations, one patient died following the operation, a thyroidectomy. There were eighteen thyroidectomies with one death; the other seventeen are living. Two patients on whom ligations had been done merely to alleviate their condition, died; one a year later, one six months later. Both of these were recognized as incurable on account of the extent of cardiac disability, and thyroidectomy was never attempted. Ligation in each case gave relief and benefit, justifying the work. All patients report marked improvement and most of the patients consider themselves cured. One patient who submitted to double polar ligation (March, 1911) now has a normal pulse, and thinks herself well. The technic employed was that used in the Mayo clinic, with modifications suggested by Wathen. Ether anesthesia has been used in most of the thyroidectomies, gas-oxygen in four cases satisfactorily, and local anesthesia once. The method of performing the operation without the patient's knowledge has been used twice.

Iowa State Medical Society Journal, Washington

December, IV, No. 6, pp. 413-496

53 Physician's Relation to Public Health, Report on Diphtheria Epidemic. J. E. Luckey, Vinton.
54 Significance of Laryngeal Manifestations During Course of Pulmonary Tuberculosis Based on Study of Six Hundred and Fifty Cases. R. Levy, Denver.
55 Tonsils and Adenoids, in Their Relation to General Systemic Infections. H. B. Gratiot, Dubuque.
56 Sinus Infections. W. W. Pearson, Des Moines.
57 Goiter. G. Kessel, Cresco.
58 Carbon Monoxid Poisoning. Report of Two Cases. M. J. Fitzpatrick, Mason City.
59 Foreign Bodies in Stomach. B. F. Denney, Britt.

Journal of Parasitology, Urbana

December, I, No. 2, pp. 55-106

60 *Tick Paralysis. J. L. Todd, Montreal, Canada.
61 Larval Trematodes from North American Fresh-Water Snails, W. W. Cort, Chicago.
62 *New Varieties and Species of Malaria Plasmodia. C. F. Craig, U. S. Army.
63 Poison Glands of Larva of Brown-Tail Moth. C. F. Kephart.
64 Killing Small Arthropods with Legs Extended. R. A. Cooley, Bozeman, Mont.

60. **Tick Paralysis.**—Previous publications have proved: (a) That a paralysis in children may be associated with the bites of ticks in western North America and Australia. (b) That a paralysis of sheep has been associated with the bites of ticks in British Columbia and in South Africa. (c) That the ticks associated with these affections are of more than one sort. (d) The *Dermacentor venustus* has produced paralysis in lambs and in a puppy in experiments made under laboratory conditions. (e) That the paralysis following tick-bite is probably an individual and novel condition. The paralysis of children is not infrequently accompanied by elevation of temperature and by other constitutional symptoms; it is possible that symptoms resembling those observed in children sometimes may appear in adults who have been bitten by ticks.

Todd found that under experimental conditions by no means every tick-bite produces paralysis in laboratory animals and that a weak extract of ticks will not cause paralysis when injected into white rats, even though it possesses definite power to prevent the coagulation of blood. The symptoms of these cases suggest infantile paralysis (acute poliomyelitis) but they are probably to be distinguished from cases of that disease by the invariably transitory nature of their paralyses. In no instance has "tick paralysis" left permanent disability.

62. **New Malaria Plasmodia.**—The reasons underlying the production of morphologically atypical generations of malaria plasmodia are obscure, but Craig is convinced that insufficient dosage with quinin, and perhaps with other drugs, often leads to the production of such plasmodia and that these plasmodia may retain for several generations morphologic abnormalities produced by adverse agencies, either physical or chemical. He has followed infections in which the plasmodia were very atypical, being modified morphologically by the exhibition of small doses of quinin, and has seen a return to normal morphology when the drug was discontinued. One of the most common effects of quinin is a great stimulation in the ameboid activity of the malaria plasmodia and an apparent stimulation in the division of the chromatin, as evidenced by the presence of delicate pseudopodia containing an abnormal amount of chromatin during the early stages of development of the plasmodia.

Craig is satisfied that *Plasmodium tenue* is an atypical form of *Plasmodium vivax*. He has observed identical forms, so far as can be judged from the description and drawing, not once, but a considerable number of times, in supposedly untreated infections with *Plasmodium vivax*, and many times in infections with this plasmodium after the exhibition of doses of quinin insufficient to kill the plasmodia. Whether or not this parasite is identical with *Plasmodium vivax*, it

cannot be accepted as a new species until the morphology of the parasites during the entire human life cycle at least is studied, for the only claim it now has to specific rank is the presence of slight differences in morphology during a very limited portion of the human life cycle; that is, the early unpigmented stages of development when such differences are commonly observed even in the well-recognized species of plasmodia.

Journal-Lancet, Minneapolis

December 15, XXXIV, No. 24, pp. 643-670

65 *Suprapubic Cystotomy. T. Bratrud, Warren.
66 Trachoma. F. C. Smith, Yankton, S. Dak.
67 Acute Endocarditis. W. T. Cain, Underwood, N. Dak.
68 Arteriosclerosis. C. W. Watson, Minneapolis.

65. Abstracted in THE JOURNAL, Oct. 31, 1914, p. 1601.

Kentucky Medical Journal, Bowling Green

December 1, XII, No. 23, pp. 737-788

69 *Trachoma in Eastern Kentucky. J. A. Stucky, Lexington.
70 *Alcohol and Public Health. J. N. Hurty, Indianapolis.
71 *Renal Tuberculosis, Its Diagnostic Difficulties and Surgical Problems. F. Kreissl, Chicago.
72 Etiology of Rheumatism. J. M. Salmon, Ashland.
73 Prophylaxis and Treatment of Acute Rheumatic Fever. G. G. Thornton, Lebanon.
74 Obscure Rheumatism in Childhood. S. P. Garrison, Bellevue.
75 Classification of Joint Lesions. W. J. Gerding, Newport.
76 *Enuresis in Children. N. W. Moore, Cynthiana.
77 Injury to Parturient Canal. H. C. Clark, Falmouth.
78 Eradication of Disease. V. C. Vaughan, Ann Arbor, Mich.

69, 70 and 76. Abstracted in THE JOURNAL, Oct. 17, 1914, p. 1417.

71. Abstracted in THE JOURNAL, Oct. 17, 1914, p. 1416.

Lancet-Clinic, Cincinnati

December 12, CXII, No. 24, pp. 627-654

79 Nitrous Oxid-Oxygen in General Surgery and Obstetrics. C. K. Teter, Cleveland.
80 Arteriosclerosis and Its Relation to Mental Diseases. E. F. Leonard, Chicago.
81 Pathogenesis of Certain Neuralgias in Relation to Inflammation, Toxicosis and Neurosis. T. A. Williams, Washington, D. C.

December 19, No. 25, pp. 655-688

82 Intestinal Anastomosis. F. Reder, St. Louis.
83 Menorrhagia and Uterine Myoma Treated by Roentgen Ray. S. Lange, Cincinnati.
84 What Constitutes in Chronic Conditions, "Thorough" Examination, and What is Meant by "Medical" Treatment? C. Pope, Louisville, Ky.
85 Iron-Clad Electromagnet for Surgical Purposes; Comparative Value of U-Shaped Combination. G. T. Fette, Cincinnati.

Medical Record, New York

December 19, LXXXVI, No. 25, pp. 1035-1076

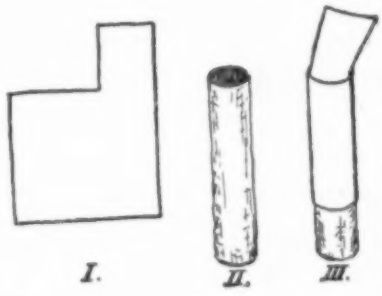
86 Gunshot and Shell Wounds. P. C. Fauntleroy, U. S. Army.
87 Infant Feeding with Top-Milk. J. M. Mabbott, New York.
88 Readings of Sphygmomanometer from Clinical Standpoint. E. G. Rankin, New York.
89 Delirium Gravé. Report of Three Cases and Differential Diagnosis. E. S. Brodsky, Westport, Conn.
90 Cyst of Cerebellopontine Angle, Operation with Relief of Symptoms. C. L. Dana and C. A. Elsberg, New York.
91 *New Method for Control of Postanesthetic Nausea. J. E. Lumbard, New York.
92 Why Fumigation Fails. C. F. Pabst, Brooklyn.

December 26, No. 26, pp. 1077-1126

93 Reflex Disturbances Due to Chronic Appendicitis. C. A. McWilliams, New York.
94 Gangrene without Organic Vascular Disease. L. Buerger and A. Oppenheimer, New York.
95 Intestinal Toxemia and Diabetes. A. C. Croftan, Chicago.
96 *Ehrlich's Aldehyd Reaction for Urobilin. S. Berkowitz, New York.
97 New Vesical Calculus Evacuator. M. W. Ware, New York.
98 *Therapy of Fever in Pulmonary Tuberculosis. E. N. Packard, Jr., Saranac Lake.

91. **New Method for Control of Postanesthetic Nausea.**—Being convinced that the prime factor in this nausea and vomiting is the smell of the anesthetic, Lumbard succeeded in controlling the nausea and vomiting by substituting some pleasant odor for the offensive smell. This he accomplished by the following method:

A piece of adhesive plaster is cut to the shape shown in *I.* in the accompanying figure. Then a piece of gauze is made into a roll of eight or ten thicknesses, about 2 inches long and ½ inch wide, as shown in *II.* Now the adhesive plaster is folded over the gauze roll, leaving a small end of plaster free to fasten to the nose, as shown in *III.* This appliance is fastened to the nose so that the free end of the gauze extends a short distance beyond the tip of the nose. On the end projecting beyond the nose is dropped a little perfume. A mustache may be utilized instead of gauze. The author's choice is oil of bitter orange peel. This perfume should be applied immediately after the anesthetic is withdrawn, the head being then elevated and turned to one side. Lumbard has tested this method in many cases, in which previous anesthesias had produced very troublesome nausea and vomiting with perfect success.



96. **Ehrlich's Aldehyd Reaction for Urobilin.**—The urines of twelve men were used by Berkowitz for this series of tests and three to four specimens in each instance, making a total of about forty analyses. In each urine a deep red color appeared as soon as the reagent was added, showing what would be considered a heavy urobilin reaction. In a series of 500 urine analyses of 214 patients with the aldehyd reagent performed independently of the clinical, operative, or post-mortem diagnosis, in a group of twenty-five patients whose urines were examined seventy-five times, only forty-eight reactions were positive. These patients represented medical, surgical and gynecologic ailments. In a majority of the cases the other chemical and the microscopic analyses were negative. In many instances there were no diseases which could be explained by any of the theories as the etiologic factor for the urobilinuria. The confusion that occurs in trying to arrive at any logical conclusions, Berkowitz states, limits the value of Ehrlich's aldehyd.

98. **Therapy of Fever in Pulmonary Tuberculosis.**—The points emphasized by Packard in the therapy of fever in tuberculosis are: First and foremost, absolute rest in bed, preferably out of doors; artificial pneumothorax in selected cases; a trial with autogenous vaccines, especially when there is copious purulent expectoration; the cautious use, if at all, of tuberculin, and then only after other measures have failed; hydrotherapeutic measures suited to the condition and comfort of the patient; and ample diet, but not necessarily "forced feeding:" and the judicious use of medicinal antipyretics.

Military Surgeon, Chicago

December, XXXV, No. 6, pp. 511-612

99 Fields for Useful Endeavor for Retired Medical Officers. C. J. Decker, U. S. Navy.
100 General Rules Governing Dressing Stations, with Suggestions for Changes in Equipment. P. L. Jones, U. S. Army.
101 Report of Medical Service School, New Jersey. W. G. Schauffler, N. J. National Guard.
102 Report of Surgical Service at Field Hospital Company No. 3, Texas City, Tex. A. W. Williams, U. S. Army.
103 Final Plea for Inactive Medical Reserve Corps. H. C. Coe, U. S. Army.
104 Osteoplasty in Modern War Surgery with Presentation of Case. J. Frank, Ill. National Guard.

Missouri State Medical Association Journal, St. Louis

December, XI, No. 6, pp. 249-296

105 Cause, Diagnosis and Treatment of Inflammation of Pelvis of Kidney. H. E. Pearse, Kansas City.
106 *Drainage in General Peritonitis. W. E. Leighton, St. Louis.
107 Production of Immunity by Tonsils and Adenoids in Children. J. Zahorsky, St. Louis.
108 Eclampsia. A. J. Chalkley, Lexington.
109 Use of Giant Magnet in General Practice. W. H. Luedde, St. Louis.
110 Exudative Middle Ear Catarrh. I. D. Kelley, Jr., St. Louis.
111 Value of Medical Society. W. K. Statler, Oak Ridge.

106. **Drainage in General Peritonitis.**—The method Leighton has employed consists in opening the abdominal cavity at the site of the focus of infection, treating the lesion as

indicated by the condition found with as little and as gentle handling of the peritoneum as possible, then inserting large cigarette drains to the pelvis, right inguinal region and right flank. The wound is closed rather loosely so as not to constrict the drains, as drainage and not the prevention of hernia is the aim sought. The patient is then placed in bed, without elevation of the head, in the ventral decubitus. The method has proven very successful. The drainage has been free and abundant for the first few days. The effect on the temperature has been striking. In several cases practically dropping to normal on the second day. In a series of nine cases of diffuse peritonitis, Leighton has had eight recoveries and one death, and in seven cases of local peritonitis there were no complications.

New Jersey State Medical Society Journal, Orange

December, XI, No. 12, pp. 597-648

112 Mucous Colitis. D. A. Kraker, Newark.
113 Diverticulitis. W. F. Faison, Jersey City.
114 Reduction of Infant Mortality. D. E. English, Summit.
115 Whooping-Cough. W. W. Riha, Bayonne.
116 Precancerous State. G. W. Cummins, Belvidere.
117 Intraspinous Infections of Salvarsanized Serum. H. R. Livengood, Elizabeth.

New York Medical Journal

December 19, C, No. 25, pp. 1193-1244

118 Case of Aphasia and Apraxia. A. B. Evarts, Washington, D. C.
119 Enteroptosis (Glenard's Disease). O. Lerch, New Orleans.
120 Gonorrheal Epididymitis and Its Non-Operative Treatment. W. J. Robinson, New York.
121 Cirrhosis of Liver in Wild Animals. H. Fox, Philadelphia.
122 Penetrating Gunshot Wounds of Abdomen. J. Frank, Chicago.
123 *Phenolsulphonephthalein Renal Function Test. J. I. Fanz, Philadelphia.
124 Autoserum Injections in Streptococcic Endocarditis. R. Abrahams, New York.
125 Eyestrain in Development of Tuberculosis. F. D. W. Bates, Hamilton, Ont.
126 Sulphurous Acid in Treatment of Furuncles. P. G. Skillern, Jr., Philadelphia.
127 Treatment of Chronic Leg Ulcers. H. D. Sonnenschein, New York.

123. **Phenolsulphonephthalein Renal Function Test.**—When making up the 1,000 c.c. standard 100 per cent. phenolsulphonephthalein solution, Fanz adds a quantity of the patient's urine, obtained just before injecting the indicator, equal in amount to the first hour's urinary output after the injection. The standard solution now will have approximately the same amount of urinary salts as the specimen solution, and the standard and urinary solution will equal each other in opaqueness and yellowish tint, making color comparison easy. To make up the standard solution, he uses 1 c.c. of the contents of an ampoule of the phenolsulphonephthalein, adds the patient's urine (obtained before injecting the indicator) in amount to equal the first hour's urinary output after appearance of the drug. Alkalinize this mixture with 25 c.c. of 10 per cent. potassium hydroxid, filter, and add sufficient distilled water to make up 1,000 c.c. This is the standard and contains 100 per cent. of the indicator in 1,000 c.c.

The first hour's urinary output after injection of the 2 c.c. phenolsulphonephthalein is now alkalinized with 25 c.c. of the 10 per cent. potassium hydroxid and filtered. To this is added enough distilled water to make 1,000 c.c. This is the test specimen. By diluting a unit of the standard, say 50 to 100 or 200 c.c. with distilled water until it matches the 1,000 c.c. solution of the first hour's urinary output the direct percentage of the indicator in the first hour's specimen can easily be estimated. Say, 100 c.c. of the standard had to be diluted up to 500 c.c. before it matched the first hour's specimen dilution, then the standard would be five times as strong as the specimen, or the specimen would contain 20 per cent. of phenolsuphonephthalein. The second hour's output of indicator (phenolsulphonephthalein) is estimated precisely like the first.

Ohio State Medical Journal, Columbus

December, X, No. 12, pp. 727-788

128 Intestinal Stasis: Medical Viewpoint. J. D. Dunham, Columbus.
129 Three Cardinal Signs of Fractures Near Joint. W. G. Stern, Cincinnati.
130 Morbidity in Puerperium. W. D. Inglis, Columbus.
131 Delayed Healing of Wound in Cataract Extraction and Its Proper Treatment. D. T. Vail, Cincinnati.
132 Nephropexy: Deductions Based on Study of Case Records. H. A. Baldwin, Columbus.
133 Polypoid Adenoma of Stomach. Report of Case. W. C. Stoner, Cleveland.

Oklahoma State Medical Association Journal, Muskogee

December, VII, No. 7, pp. 203-234

134 Two Conditions of Especial Interest to Both Internist and Surgeon. L. J. Moorman, Oklahoma City.
135 Peptic Ulcer—Etiology and Pathology. L. A. Turley, Norman.
136 Id. Diagnosis and Treatment from Internists' Viewpoint. L. A. Rieley, Oklahoma City.
137 Optimism, Pessimism and Nihilism. S. H. Landrum, Altus.
138 Conservative Surgery in Pelvic Infections of Neisserian Origin. C. von Wedel, Oklahoma City.

Surgery, Gynecology and Obstetrics, Chicago

December, XIX, No. 6, pp. 683-802

139 *Radical Operation for Cancer of Pyloric End of Stomach. W. J. Mayo, Rochester, Minn.
140 *"Lavandera's Ankle" (Bursitis Subcutanea Malleoli Externus). G. G. Davis, Manila, P. I.
141 Operative Treatment of Carcinoma of Penis. J. H. Cunningham, Jr.; Boston.
142 *Two Cases of Filariasis. G. E. Armstrong and E. J. Mullally, Montreal, Canada.
143 Surgical Myxorrhea Coli, Myxorrhea Membranacea and Myxorrhea Colica. S. G. Gant, New York.
144 Uterine Sarcoma. Report of Two Cases. W. D. Fullerton, Cleveland.
145 Dactylocostal (Osseous and Cartilaginous) Rhinoplasty. E. G. Blair, Kansas City, Mo.
146 The Duodenum: Roentgen Study. C. W. Lippman, San Francisco.
147 *Syndesmorrhaphy and Syndesmoplasty. C. E. Phillips, Los Angeles.
148 *Phenolsulphonephthalein Test from Viewpoint of Abdominal Surgeon. S. E. Tracy, Philadelphia.
149 Chronic Abdomen. Review of Nineteen Cases. F. G. Connell, Oshkosh, Wis.
150 Some Considerations which Determine Extent of an Operation in Septic Invasion of Lateral Sinus. H. E. Jones, Liverpool, England.
151 Polycystic Kidney; Analytical Study. C. E. Barnett, Fort Wayne, Ind.
152 Pseudomyxoma of Peritoneum. E. G. Lewis, San Francisco.
153 Enchondromata, with Special Reference to Scapula. M. T. Sudler, Rosedale, Kan.
154 Malignant Papillary Cystadenoma of Kidney with Metastases. H. L. Kretschmer and A. M. Moody, Chicago.
155 Efficiency of Seelig-Gould Method of Testing Antiseptic Solutions. L. U. Gardner, New Haven, Conn.
156 *New Method of Round Ligament Fixation. H. T. Goodwin, Tompkinsville, N. Y.
157 *Rubber Gloves: Technic of Mending. F. J. Cotton, Boston.
158 Thymic Asthma Successfully Treated by Roentgen-Ray. Report of Two Cases. H. J. Morgan and H. W. Dachtler, Toledo, Ohio.
159 Electrothermic Coagulation and Roentgen Therapy in Treatment of Malignant Disease. G. E. Pfahler, Phildelphia.
160 *Traumatic Diverticulum of Cecum Following Appendectomy. F. E. Bunts, Cleveland.
161 Anastomosis of Vas Deferens to Epididymis of Opposite Side for Sterility. F. R. Hagner, Washington, D. C.
162 An Aid to Little-Doderlein Method for Obtaining Lochial Culture. W. F. Shaw, New York.
163 *Method of Drainage in Suppurative Appendicitis. J. A. Pettit, Portland, Ore.
164 Internal Derangements of Knee-Joint. A. H. Tubby, London.
165 *Ferment Diagnosis (Abderhalden) for Cancer. C. Goodman and S. Berkowitz, New York.
166 *Method of Distending Veins of Forearm Preparatory to Intravenous Infusion or Salvarsan Administration. A. F. Hoge, Fort Smith, Ark.
167 Skin Suture. C. L. Heald, Cedar Rapids, Ia.

139. **Cancer of Pyloric End of Stomach.**—Twelve operations have been done recently in the Mayo clinic by Pólya's method with one death from pulmonary embolus, the necropsy showing perfect condition of the operative field. The technic employed is as follows: The diseased portion of the stomach is removed in the usual way and the stump of the duodenum closed and buried. An opening is made in the avascular arcade of the transverse mesocolon and the upper jejunum pulled through until it can be easily brought into contact with the stomach. The end of the stomach which is held in the crushing clamp of Payr, is united by suture to the loop of jejunum quite as the ordinary gastroenterostomy is made. If the diameter of the end of the stomach be very large, it can easily be diminished by placing

the sutures in such manner as to take a proportionately greater bite in the stomach than in the intestine, thus reducing the lumen of the stomach as the suturing progresses. The stomach is anastomosed to the jejunum at a point in which the jejunal blood supply is extraordinarily good, and the jejunum can be depended on to do more than its share in the healing process. Before the inner through-and-through sutures are placed, the stomach and intestine are grasped with elastic holding clamps to prevent soiling, the inner row of sutures is then run entirely around and the outer row completed. The entire anastomosed end of the stomach is then drawn down below the transverse mesocolon and the margins of the opening in the transverse mesocolon carefully attached by a number of sutures to the wall of the stomach. Fine silk is used for the peritonemuscular sutures and chromic catgut for the through-and-through inner row.

140. **"Lavandera's Ankle."**—In Manila Davis found a bursitis which he terms "lavendera's ankle." Many of the washerwomen, or lavanderas, do their washing in the rivers; and generally a flat rock which is close to the surface of the water and well down in the river is selected. The position assumed when working is such that the lateral aspect of the leg is next to the rock, the external malleolus thus coming forcibly in contact with the hard surface. The weight of the opposite leg rests on the median aspect of the leg next the rock. And thus with the to-and-fro scrubbing movements a considerable pressure is applied over the prominence of the external malleolus. Histologically, the walls of the bursa are found thickened, and the pathologic process may be classified as chronic fibroid or proliferative bursitis.

142. **Two Cases of Filariasis.**—The clinical manifestations of the two cases reported by Armstrong and Mullally were similar. The outstanding feature of interest in the pathologic findings was the presence in each case of a huge lymphatic varix, extending from the groin into the thorax, unassociated with a chylous exudate.

147. **Syndesmorrhaphy and Syndesmoplasty.**—An operative condition of the ligaments in Phillips' opinion exists in frank injuries in which there is reasonable grounds for suspecting a completely ruptured ligament; in old sprains in which after the lapse of one or two months there is still distinct abnormal mobility; in cases of recurring sprains leading to frequent disabilities; in compound sprains or in compound dislocations.

148. **Phenolsulphonephthalein Test.**—Tracy does not believe it to be possible to work out the minimum percentage phenolsulphonephthalein output which will be safe to undertake surgical operations, nor is it possible from the phenolsulphonephthalein test to determine what cases should or should not be subjected to operation. He believes it will never be possible to determine this point by any laboratory test, as the functional activity of a kidney varies under numerous circumstances and at different times. In determining whether or not a patient should be subjected to operation, the history, clinical symptoms, and physical examination are of much greater value than any renal functional test yet devised. The phenolsulphonephthalein test used in conjunction with the clinical symptoms, history and physical examination is of value. A small percentage output should put the surgeon on his guard and cause him to study the patient most carefully before undertaking an operation. The phenolsulphonephthalein test should be used only as one of the many methods of investigation in ascertaining the condition of the patient.

Tracy studied 100 cases. The dye appeared in the urine from five to forty-two minutes, the average being ten minutes and eighteen seconds. The average output for the first hour was 34.27 per cent., for the second hour 20.83 per cent. and for the two hours 55.1 per cent. In 91.7 per cent. of the tests the output was greater in the first hour. In 8.3 per cent. of the tests the output was greater in the second hour. In 20 per cent. of the tests there was 4 per cent. or less than 4 per cent. difference between the output in the first and second hours. Five cases, with the lowest phenolsulphonephthalein output in the series, were subjected to major operations and had a normal convalescence. Other cases with a much higher phenolsulphonephthalein output had a complicated convalescence, with evidence of renal disturbances. One case with a phenolsulphonephthalein output of 53 per cent. died of uremia in less than two months. Another case with a phenolsulphonephthalein output of 72 per cent. died of uremia in less than one month. A third case with a phenolsulphonephthalein output of 55.5 per cent. died in the hospital of uremia fifty-two days after operation. A case with a phenolsulphonephthalein output of 87.5 per cent. died in the hospital of uremia five days after operation. In some cases the phenolsulphonephthalein output was less after the patients were placed in bed and the excretory organs toned up; in other cases the output increased. In determining the functional activity of each kidney, Tracy says, the test should be applied several times and the average taken. The result should then be checked up by other tests.

156. **New Method of Round Ligament Fixation.**—In Goodwin's method the abdomen is opened in the usual way, the round ligament separated, and by means of a ligature carrier, which has been thrust through the rectus muscle, drawn to the surface of that muscle. The loop of round ligament is held up by an assistant and the surgeon, either with scissors or scalpel, commencing at the site in which the ligament has been drawn through, cuts for about three-quarters of inch in length in the direction of the fibers and toward the pubis the rectus muscle and underlying tissues, including the peritoneum. The assistant then holds at the upper angle of this incision one side of the loop of round ligament and places and holds the other side in the lower angle. While so held the loop arches over the incision made in the rectus, one pillar being in the upper, the other in the lower angle. The surgeon, working under this arch, sutures together with catgut the edges of the incision in the rectus lying between the pillars held in the upper and lower angle, being careful to bring together the fibers of the muscle in the same apposition they were before incised. This leaves the loop of ligament resting on a bridge of muscle three-quarters of an inch long, one end of the ligament passing into the pelvic cavity through a small opening in the lower angle of the incision and the other through a similar opening in the upper. It is impossible for the ligament to get away from its moorings and drop back into the pelvic cavity. Although it is not necessary, the end emerging from the one descending into the pelvic cavity may be anchored at its site by passing one suture through it and the rectus muscle.

157. **Rubber Gloves: Technic of Mending.** — Cotton describes his technic as follows: Take an ordinary library filing card, spread it rather heavily with ordinary library paste, and paste on it the rubber tissue (Cotton uses dentists' rubber dam of light weight), smooth this flat, and let the paste dry. Then when a patch is needed, cut one out, rubber, card and all, to fit the tear. Put the glove on the hand, inside out, moisten the patch with cement, let it dry for a few seconds, fit it on in cases in which it belongs and press it home hard. If the tear is large it is easier to lay the moistened patch down and fit the edges of the tear to it, then press. That is all there is to it, except for powdering the glove and laying it by. Later, soak it in water and the bit of card comes away as the paste dissolves. This gives a secure patch, adherent clear to its edges, flat and watertight, and fit to stand boiling as well as any patch is.

160. **Diverticulum of Cecum Following Appendectomy.**—Following appendectomy the pain of which Bunts' patient previously complained, entirely disappeared for nearly a year, when she began to have renewed attacks of pain in the right side. Examinations were made on various occasions and it seemed that the pain must be due to a slightly enlarged ovary on the right side. Bunts opened the abdomen through the right rectus muscle and found the right ovary slightly enlarged and cystic. As a matter of curiosity he examined the site of the previous appendiceal operation and found a distinct white ring in which the purse-string suture had been placed, but spread out to nearly three-fourths inch in diameter. From this ring there protruded a pouch like

the finger of a glove, though somewhat conical and nearly one inch in length. By squeezing the cecum, he could force this to balloon with gas. Its wall was quite thin, apparently devoid of any mucosa, and could be invaginated easily back into the cecum. Feeling that the distention of this diverticulum might be the cause of some of her colicky pain and that its extreme thinness might make it a positive source of danger from rupture, it was pushed back into the cecum and a double row of purse-string sutures applied to close the opening. Subsequent to the operation the pain had disappeared. Since this time, Bunts has examined the cecum in all pelvic operations in which the appendix had previously been removed and has found two more distinct cases, though not nearly so large as the first, but the widened ring and thin dilatable wall were plainly to be seen, and in all he followed the procedure used in the first case.

163. **Method of Drainage in Suppurative Appendicitis.**—Pettit drains in these cases close to the ilium, so that the lateral wall of the abdomen forms one wall of the sinus.

165. **Ferment Diagnosis for Cancer.**—In a series of cases of malignancy Goodman and Berkowitz were able to obtain thirty reactions out of thirty-three cases in which the results corresponded to operative post mortem and clinical findings. One case of carcinoma was not diagnosed and one negative case was diagnosed as a sarcoma.

166. **Method of Distending the Veins of Forearm.**—The method used by Hoge consists in using an inflatable rubber bag about 4 inches in width and long enough to encircle the arm (the arm-band from a blood-pressure apparatus answers admirably), with a tube attached leading to a hand pump with a screw-escape valve. The arm-band is placed in position around the arm, well above the site of insertion of needle or cannula. Inflate the bag with the hand pump. This causes a stasis of the venous circulation without perceptibly obstructing the arterial flow, and any desired degree of distention of the obstructed veins may be produced. When the needle has been inserted (closed method) or the vein has been freed and the cannula inserted (open method) turn the screw-escape valve, releasing pressure and permitting reestablishment of the venous flow. The solution may then be permitted to flow in as rapidly as is desirable.

Wisconsin Medical Journal, Milwaukee

December, XIII, No. 7, pp. 257-296

168 Focal Infections and Their Relation to Systemic Diseases. F. Billings, Chicago.
169 Vaccine Treatment of Various Infections. E. C. Rosenow, Chicago.
170 Typhoid Vaccination. E. C. Pratt, Kankakee, Ill.
171 Annular Opacity of Anterior Surface of Lens After Traumatism. C. Zimmermann, Milwaukee.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Roentgen Ray, London

December, XIX, No. 7, pp. 239-274

1 *Diathermy. E. P. Cumberbatch.
2 *Simple and Rapid Method of Localizing Bullets. (Ring Localizer.) F. Hernaman-Johnson.
3 Roentgen Ray Diagnosis of Gastro-Intestinal Conditions, with Special Reference to Appendicitis. A. F. Hertz.
4 Comparative Value of Roentgen Ray and Radium in Treatment of Malignant Growths. J. MacIntyre.

1. **Diathermy—Its Production and Use in Medicine and Surgery.**—When diathermy is to be used for surgical purposes, Cumberbatch states the current must be led through the tissues that are to be destroyed. Two electrodes are required. One of these, the active electrode, is placed on the morbid tissue, the other, the indifferent electrode, is placed on the skin of some other part of the body. The current then passes through the body between the electrodes and heats all the tissues, both normal and abnormal, along its path. It is therefore, necessary to adopt some device so that the temperature of the abnormal tissues may be raised sufficiently high to cause them to coagulate, without at the same time injuriously heating the normal parts. In other words, the life-destroying heat must be restricted to the abnormal tissues. This will be the case if the indifferent electrode makes contact with a large surface of the body and the active electrode with a small surface of the morbid tissue. The parts under the indifferent electrode, if the latter is sufficiently large, will be but slightly warmed, because the path for the current in these parts is wide and its resistance correspondingly low. The parts in contact with the active electrode will be strongly heated because the path for the current is narrowest in this situation and its resistance highest. The highest temperature will always be in the tissue in immediate contact with the active electrode, while in the tissues along the path of the current the temperature will be progressively lower as the distance from the active electrode is increased, till at a certain distance the tissues will be outside the destructive influence of the diathermy.

This distance is determined by the temperature that is reached at the active electrode. If the temperature at this electrode is sufficient to coagulate the tissue, destruction of the latter will extend only for a short distance around. As the temperature is raised the coagulation spreads further. When the temperature reaches a certain point the tissues in contact become dry, and then they conduct the current badly, and the needle of the ampèremeter swings back toward zero. Loud crackling sparks leap over and through the dried tissue on to the moist tissue around. If the current is not switched off violent commotion ensues around the electrode, sparks dart around and bubbles of steam escape from the tissue. Coagulation spreads further and the tissue around the electrode becomes dry and hard. This stage is reached sooner when the active electrode makes a small contact with the tissue, because the smaller the contact the narrower the path for the current, the higher the resistance the greater the heat. It is advisable, when performing diathermic cautèry on the living subject, to switch the current off when sparks begin to appear, because there is at this stage not a pure diathermy effect; that is to say, there is excitation of muscles and nerves as well as heat penetration. This excitation might become extremely violent.

2. **Simple and Rapid Method of Localizing Bullets.**—A method of which Hernaman-Johnson has made considerable use is the following: Suppose a bullet has lodged somewhere about the middle of the thigh. The patient is placed on an ordinary examination couch having the tube beneath. His feet are placed together, with toes pointing directly upward. The Roentgen rays are turned on with a widely open diaphragm, and the general position of the bullet ascertained by the fluorescent screen. The aperture is now gradually narrowed, and the tube moved about so that the image comes into the center of the field, which, if the anticathode has been correctly centered will be a perfect circle. This process is continued until the illuminated patch is not more than 1 inch in diameter. The image of the bullet is now vertically above the bullet itself.

The only special device necessary is now used. It consists of a metal ring having an internal diameter of about ¾ inch fixed to the end of a flat wooden handle 1 foot in length. The ring is slipped under the screen, and moved until its shadow encircles that of the bullet. A mark is made on the skin with silver nitrate in the center of the ring, the screen being first removed, but care being taken not to displace the "ring-localizer." Next, the screen is readjusted and the ring is now slipped between the patient and the couch. The encircling position is again found, and a second mark made, this time on the skin of the lower aspect of the limb. If everything has been carried out properly, this second mark will be found vertically below the first.

To ascertain at what distance below the surface the bullet will be found the patient is rolled over on his side. The original procedure is now repeated and two other marks are obtained, a line joining which cuts a line joining the first two at right angles. The patient is now returned to his former position, and an inspection of the marks will enable one to judge within half an inch the distance at which the bullet lies below the surface.

Points essential to the success of the method are: 1. The beam of Roentgen rays must be vertical, and the shadow of the bullet must be maneuvered into the center of the small illuminated field. 2. The "ring-localizer" must accurately encircle the bullet shadow. 3. The nitrate of silver marks must be placed at the center of the ring. It is better to make dots for the vertical marks, and crosses for the horizontal, in order to avoid subsequent confusion. 4. Whenever the nature of the case permits, the patient should be operated on in one or other of the positions in which the localizing was carried out. 5. Lastly, wherever possible, the patient should be taken directly from the examining couch to the operating room. Bullets sometimes alter their position to some extent even in twenty-four hours and undeserved discredit is thereby brought on the art of the radiographer.

British Medical Journal, London

December 5, II, No. 2814, pp. 953-1004

5 Value of Radiography in Diagnosis of Bullet Wounds. J. Bland-Sutton.
6 Threshold of Disease. J. A. Lindsay.
7 *Acute Appendicitis and Acute Appendicular Obstruction. D. P. D. Wilkie.
8 Leeches. A. E. Shipley.

December 12, No. 2815, pp. 1005-1052

9 Transient Paraplegia from Shell Explosions. T. R. Elliott.
10 *Antiseptics in War. G. L. Cheatle.
11 Cockroaches. A. E. Shipley.
12 Incipient Pulmonary Phthisis of School Children. W. Overend.
13 *"Elderton" Method of Control in Testing Value of New Tuberculin. H. B. Shaw.
14 Artificial Pneumothorax. H. deC. Woodcock and J. A. M. Clark.

7. **Acute Appendicular Obstruction.**—Wilkie summarizes his paper as follows: Two acute pathologic processes are met with in the vermiform appendix—acute appendicitis and acute appendicular obstruction. Clinically acute appendicitis is distinguished by the signs of inflammation, there being from the onset a rise in pulse and temperature. Acute appendicular obstruction gives rise to vomiting, colicky pain, and abdominal tenderness, but at the outset to no appreciable rise in pulse or temperature. The changes occurring in an appendix the lumen of which is completely obstructed depend on the presence or absence of fecal matter within its lumen. In experimental obstruction in an artificial appendix the changes vary greatly according to the nature of the diet of the animal previous to the experiment, rich protein diet being associated with much more rapidly destructive changes than carbohydrate. Undigested protein, putrefactive bacteria and an alkaline reaction together produce rapid gangrene in the walls of the obstructed organ. The prevalence of the severe forms of acute appendicular disease in Western as contrasted with Eastern people is probably to be explained by the animal diet indulged in by the former. On the same lines may be explained the increasing frequency of such disease in large industrial areas and its relative frequency in the male sex.

10. **Antiseptics in War.**—Cheatle advocates the use of the following solution in place of iodin: a mixture of 1 in 20 phenol and 1 in 500 mercury perchlorid in absolute alcohol. It is colored with rosalin. The value of this combination is as follows: 1 in 20 phenol is a solvent of fat as well as a germicide. Mercury perchlorid is a most powerful germicide. Rosalin has an important action in being a mordant. Wherever the dye is seen mercury perchlorid is present even weeks after application. Alcohol dries sooner than water, it does not macerate the tissues so much, and it appears to encourage greater penetration of the antiseptic. No case has suffered from mercurial or phenol poisoning, although it has been applied frequently and freely to large granulating wounds.

Glasgow Medical Journal

December, LXXXII, No. 6, pp. 401-476

15 *Congenital Syphilis. L. Findlay and M. E. Robertson.
16 Education of Semiblind. W. B. I. Pollock.
17 Esophagotomy for Removal of Tooth-Plate. W. Downie.

13. **Control Method of Testing Value of New Tuberculin.**—An analysis of eighty-four cases treated by reactionless doses of tuberculin is given by Shaw. Of 23 cases which improved, 11 had been treated with tuberculin, 12 had not. Of 29 cases which were worse, 16 had been treated with tuberculin, 13 had not. Of 32 cases which remained *in statu quo*, 15 had been treated with tuberculin, 17 had not. So far as afebrile cases are concerned, Shaw says, the reactionless dosage with tuberculin gives more favorable results than treatment without tuberculin, as far as these cases are concerned.

15. **Wassermann Reaction in Congenital Syphilis.**—Findlay and Robertson state emphatically that the Wassermann reaction at least in Scotland is practically only found in syphilis, and, if properly controlled, is a test of great diagnostic value. A condition of chronic eczema situated at the angles of the mouth and invading the mucous membrane of the lips, is often of a syphilitic nature. Congenital heart disease is not infrequently found in patients suffering from congenital syphilis, as evidenced by a positive Wassermann reaction. About 45 per cent. of cases of spastic diplegia and 60 per cent. of mental defectives also seem to be the subject of congenital syphilis, as evidenced by a positive Wassermann reaction.

Lancet, London

December 12, II, No. 4763, pp. 1343-1396

18 Modern Aspects of Certain Problems in Pathology of Mental Disorders. E. Goodall.
19 Wounds of Soft Parts Produced by Modern Bullet. G. H. Makins.
20 Fatal and Exceptionally Intense Infection with Malaria (P. Falciparum). J. W. S. MacFie.
21 *Insomnia and Suicide. C. E. Pronger.
22 Experiments on Germicidal Action of Colloidal Silver. W. J. Simpson and R. T. Hewlett.

21. **Insomnia and Suicide.**—The influence that slight refractive errors have in causing many of the functional nerve troubles so prevalent in these days is discussed by Pronger. Among these insomnia has naturally had a prominent place. Slight errors of refraction although not causing any visual defect, are of great importance in that they give rise to sundry neuroses. Especially, says Pronger, should these slight degrees never be ignored in any case of insomnia, because some error is nearly always present in those cases not associated with organic disease, such as tumor, kidney troubles, and the like, or with persistent pain from any cause. Insomnia is not usually the only symptom, but is generally associated with attacks of great depression, and often with giddiness or headaches. A few illustrations are given by Pronger of what can be done for the relief of insomnia, and also of some of the difficulties that have to be surmounted, particularly the scepticism of the patient as to the possibility of glasses being of use for such a purpose, especially if the sight is good or an oculist has already been seen.

Archives de Médecine des Enfants, Paris

August, XVII, No. 8, pp. 561-640

23 *Encephalitis and Acute Ataxia. L. Guinon.
24 Prophylaxis of Tuberculosis in Children by Removing Them from Infected Environment. (L'oeuvre de Grancher à Lyon.) E. Weill and G. Mouriquand.
25 Meningitis with Associated Meningococcus and Tubercle Bacilli. Loubet, Auban and Riser.
26 *Tetanus Inoculated from Felt Pad. A. Broca and M. Houdré.
27 Pneumonia with Symptoms of Appendicitis; with Expulsion of Ascaris; Two Cases. M. Lassalle.

23. **Encephalitis and Acute Ataxia.**—Guinon declares that when a child has fever and convulsions the trouble is always labeled "meningitis" and no one seems to think of encephalitis as the true cause of the symptoms. He reports two cases in detail which seemed to be actual encephalitis of a mild type, the children recovering completely. Both cases occurred during the epidemic of poliomyelitis in 1910, and each of the children had recently passed through measles. The first symptoms in one case had been sudden loss of the use of the legs, without impairment of consciousness, headache or vomiting. This period was followed by gradual loss of the intelligence; the language became that of a child a year old, with cries and restlessness, stiff neck and rigidity of the left side. After two weeks of this there were six days of torpor, apparent unconsciousness, except that the child wept. The face was very red but there was no Kernig sign nor rigidity

of the back of the neck and the eyes seemed normal. There was a general stiffness and exaggeration of the reflexes. There was also contracture on the right side of the face and left side of the body. The symptoms gradually subsided, a phase of aphasia and ataxia following, but the child entered on convalescence about the thirtieth day and in ten days was practically cured. The main reliance in treatment had been on hot baths, chloral and potassium bromid. The temperature kept about 37.5 C. In the other case headache and pain in the neck with rigidity at the back of the neck were the first symptoms to attract attention. The knee-jerk was exaggerated and the plantar reflex in extension. The face was extremely red but there was little or no fever. During the first two or three weeks there was apparent unconsciousness, incontinence, continual whining but almost absolute inertia to stimuli of all kinds but without anesthesia to pain. Then followed ten days of extreme restlessness, the choreic movements of the head causing erosions; the face was intensely red; the legs were still stiff but the child began to understand what was said to him and was able to drink and there was no further incontinence. The third phase was a rapid convalescence to a complete cure. The cerebrospinal fluid was always found normal which eliminated hemorrhage and microbian meningitis. The syndrome resembled that described by Leyden in 1868 as acute ataxia, but the incoordinate movements were not always of this type. They resembled more those of chorea at times.

26. **Tetanus from Use of Felt Pad in Treating Scoliosis.**—The cases of tetanus described here were mentioned recently in these columns, 1914, lxiii, 44.

Presse Médicale, Paris

November 19, XXII, No. 76, pp. 681-696

28 *Handy Mufflers for the Soldiers. Michel.
29 Localization of Foreign Bodies. (Localisation des projectiles dans le corps des blessés par voie radiographique.) E. Colardeau.
30 Phenol in Tetanus. Talamon and M. Pommay.
31 Improvised Inexpensive Hospital Equipment. (Aménagement d'un hôpital temporaire par des moyens de fortune.) J. Gourdet.
32 Methylene Blue Test for Purity of Milk. (Les réductases du lait de vache.) G. Vitoux.

28. **Handy Mufflers for the Men in the Trenches.**—Dr. Michel, the inventor of the clips used in closing wounds, now presents a muffler for the soldiers in the field which can be used for a hood, a vest, a body band, muff or a jacket as desired. The muffler is crocheted, about 1.2 meters long by 40 cm. wide (about 48 by 16 inches). A slit 20 cm. long (about 8 inches) is left lengthwise in the center, and buttons are sewed on each end and along half of the edge of each side—about two dozen buttons in all. Crocheted mufflers are much better than knitted or cloth ones, he states. The crochet should be loose with a simple single double stitch. The large meshes permit the buttons to be buttoned anywhere in the muffler, thus fitting it to any surface. Several mufflers buttoned together make a warm blanket.

Beiträge zur Klinik der Tuberkulose, Würzburg

September 15, XXXII, No. 2, pp. 147-255. Last indexed Jan. 2, p. 90

33 *Conjugal Tuberculosis. (Statistisches über die Tuberkulose der Ehegatten.) L. Levy.
34 Variations in Weight in Pulmonary Tuberculosis during Sanatorium Treatment. (Gewichtschwankungen bei Lungenkranken während der Sanatorienbehandlung.) N. J. Strandgaard.
35 Chemotherapy of Pulmonary Tuberculosis. (Experimentelle und klinische Studien über die Einwirkung von Borcholin und Aurum-Kalium-Cyanatum auf die Lungentuberkulose. A. Mayer.
36 *Acutest Form of Tuberculous Septicemia. (Typhobacillose Landouzys.) F. Reiche.
37 Friedmann's Treatment for Tuberculosis Kills Five Guinea-Pigs. (Die Virulenz des Friedmannschen Tuberkulosemittels.) K. Kaufmann.

33. **Conjugal Tuberculosis.**—Levy devotes seventeen pages to the tabulated details of 317 families at Posen in which husband or wife or both were under medical supervision for pulmonary tuberculosis. They show that infection of the consort is of extremely rare occurrence although it is possible. When the consort does develop tuberculosis, it runs an exceptionally mild course. If the tuberculous husband or wife is removed from the environment, the secondarily infected consort soon conquers the tuberculosis. Among those resisting infection from their tuberculous consort there were many who were "scrofulous" during youth. The tables sustain the assumption that infection with tuberculosis occurs early in life among wage-earners. Also that an infection of this kind confers immunity to new infection later in life or, if infection occurs, the course is essentially milder.

36. **Acute Tuberculous Septicemia.**—Reiche comments on the extreme rarity of this most acute form of tuberculosis—Landouzy's typhobacillosis. It simulates typhoid and the lesions are solely those of congestion and degeneration, not reaching the stage of tubercle production as the disease either subsides to complete recovery or proves speedily fatal. In a recent case, in a girl of 18, the course was typical of this septic tuberculous typhobacillosis. No tissue reactions suggesting tubercles were found at necropsy about a month after the first symptoms had been noted. In explaining the syndrome, he suggests that the septicemia itself might have entailed the peculiar anemia and hemorrhagic diathesis, or the escape into the blood of tuberculous masses from an old cheesy bronchial gland might have failed to induce miliary tuberculosis only because the bone marrow had been suffering from a degeneration resembling that of leukemia. Still another causal possibility is that a primary anemia with pathologic reaction of the bone marrow had reduced the resisting powers of the organism to their lowest point.

Berliner klinische Wochenschrift

November 23, LI, No. 47, pp. 1829-1852

38 Nervous Disturbances in Children. (Nervöse Störungen bei Kindern.) O. Katz.
39 *Mycosis of the Skin from Wearing Old Sweaters and Woolen Underclothes. (Pilzerkrankung der Haut, infolge des Gebrauches wollener Unterwasche.) Isaac.
40 Agglutination Test for Differentiation of Yeasts. (Differenzierung einzelner Hefearten mit Hilfe spezifischer Agglutinine.) S. Lichtenstein.
41 Nucleic Acid Compounds in the Nissl Bodies of the Ganglion Cells. M. A. van Herwerden.
42 *Sterilization of Women by Roentgen Exposures. (Röntgensterilisierung.) L. Görl.
43 Vaccine Therapy of Neuralgia and Neuritis. (Heilung der Neuralgie und Neuritis durch Bakterientoxine.) Döllken. Commenced in No. 46.

39. **Mycosis from Woolen Underwear.**—Isaac says that a number of cases of a puzzling skin affection which simulates psoriasis or syphilids have been encountered with the onset of cold weather. They proved to be a fungus trouble, and he has traced the fungus to woolen sweaters and woolen underwear that had been laid away during the summer and then put on without washing.

42. **Sterilization with the Roentgen Rays.**—Görl reiterates that when on account of constitutional disease it becomes necessary to prevent further conception, operative sterilization should be recommended for women under 40. After that age Roentgen exposures answer the purpose fully as effectually and with the minimum of discomfort, as also when an operation is contra-indicated on account of heart or kidney disease, diabetes or hemophilia. He discusses the literature on the subject and the technic. A 3 mm. aluminum filter guards against mishaps.

Deutsche medizinische Wochenschrift, Berlin

November 17, XL, No. 47, pp. 1977-2000

44 *Erysipelas. (Wundinfektionskrankheiten. III.) G. Jochmann.
45 *Tetanus. (Behandlung schwerer Tetanusfälle.) T. Kocher. Commenced in No. 46.
46 Small Wound Where Bullet Entered and Large Wound Where It Emerged: Three Cases. (Verletzungen durch Dum-Dum-Geschosse.) B. Riedel.
47 *Injury from Shell without Direct Contact. (Aetiologie der Granat-Kontusionsverletzungen.) O. Harzbecker.
48 *No Transmission of Nervous Irritation from One Eye to the Other. (Ueber sympathische Reizübertragung.) A. Elschnig.
49 *Lipoid Substances in Sediment of Children's Urine. E. Reinike.

44. **Erysipelas.**—Jochmann comments on the rarity of erysipelas among the wounded now, but adds that when it does occur the prognosis is unusually grave on account of the superposed damage from the wound. The mortality from erysipelas of the face is generally accepted as between 3 and

5 per cent. but involvement of the larynx is liable to prove fatal unless tracheotomy can be done in time. Sepsis following erysipelas generally runs a particularly severe course. He has tried all kinds of treatment and found that the simplest measures seem to be as effectual as any. All owe their efficacy mainly to the tendency towards spontaneous subsidence of the erysipelas. He now uses almost exclusively merely cooling applications of aluminum acetate or a boric acid solution, frequently renewed. The patient finds this refreshing. For the face he applies boricated petrolatum on gauze. To keep the process from spreading, he applies a broad constricting band or straps the region with plaster and has found these occasionally but not always effectual in keeping it within bounds. Local application of superheated air has given rather favorable results in the hundred cases in which he has induced hyperemia in the region by this means. Antistreptococcus serum has also impressed him favorably by its influence on the general condition. The pulse grew better and the mind clearer, but no special influence on the local process was apparent.

45. **Tetanus.**—Kocher analyzes recent literature on the treatment of tetanus and reiterates from his own experience that general anesthesia may tide the patient through severe convulsions. He mentions also that rhythmical inhalation of oxygen under an atmospheric overpressure of 3 cm. water put an end to the menacing cramp of the muscles of respiration in a case recently reported by Jehn in which the paralysis of respiration persisted after severing the phrenic nerve on each side. Kocher has had six adult patients with extremely severe tetanus recover under intraspinal administration of magnesium sulphate supplemented by intratracheal inhalation of oxygen and tracheotomy. With the Meltzer technic tracheotomy is not necessary.

Wicki ascribes the action of the magnesium sulphate to dehydratation of the spinal cord and nerve roots by the drug, and this would explain the transitory nature of the effect and the lack of any permanent injury from it. Kocher emphasizes that the desired influence on the tetanus can be counted on only when the full dose has been given, that is, enough to cause the complete relaxation of the contracted muscles. If one injection does not suffice, others must be given, and thus kept up until the tetanus toxin in the body has exhausted its effect. He has repeated the intradural injection as many as ten times. Hotz has reported two cases of recovery under subcutaneous injections of magnesium sulphate; one patient was given 40 gm. twice a day for five days.

Kocher advocates a preventive injection of 10 or 20 gm. of antitetanus serum for every wounded soldier; on the slightest sign of tetanus, a supplementary injection under local anesthesia of 10 c.c. in the vicinity of the wound and in exposed muscle tissue, supplemented by endoneural injection to block the nerve and, further, intraspinal injection of 10 c.c. after allowing about that amount of fluid to escape. The wound is to be cleared out and kept open, protected only with a thin layer of gauze. If the patient is a vigorous man, from 30 to 45 gm. of a 25 per cent. solution of magnesium sulphate should be given by subcutaneous injection if the reflex excitability is increased and the muscles are stiff, repeating the dose if the symptoms persist or become mildly aggravated, reenforcing these measures at need with large doses of chloral—at least 2 gm. at a dose up to 12 gm. in the twenty-four hours. If the symptoms grow worse, 10 c.c. of the 15 per cent. solution of magnesium sulphate should be injected into the dura, the patient reclining flat with head raised. If the muscles do not relax in fifteen minutes, the neck and head should be lowered. When the symptoms and condition permit, the subcutaneous can be substituted for the intraspinal technic or chloral can be given the preference. The intraspinal injection is liable to induce paresis of the bladder, so evacuation of the bladder must be supervised, and the menace of paralysis of the respiration must be constantly borne in mind. An ample supply of water must be ensured and the bowels kept open with glycerin enemas. Cooling of the body with ice-bags seemed to have favorable influence in some of his cases.

47. **Injury from Exploding Shell Without Direct Contact.**—Harzbecker analyzes four cases of hemiplegia following the air concussion from a shell bursting from six to twelve feet away. The symptoms and course of the disturbance indicate that the air concussion burst a blood-vessel in the brain, lung or eye. In two cases there was a typical apoplectic attack, leaving hemiplegia. When such a concussion proves immediately fatal without signs of external injury there is probably some small hemorrhage into some vital part, like the respiration center, or profuse internal hemorrhage.

48. **No Transmission of Experimental Irritation from One Eye to the Other.**—Elschnig found that the composition of the vitreous humor—as indicated by the refractometer—is constant in the rabbit eye. The difference between the two eyes is zero or a very minute fraction. This permits instructive experiments with irritation applied to one eye, as transmission of the irritation to the other eye would be at once evident in the refractometric findings. His numerous experiments were constantly negative. Even injection of croton oil or subconjunctival injection of strong salt solution failed to induce any signs of irritation in the untreated eye at any time during the following two weeks. The research was done on rabbits, monkeys and dogs under general or local anesthesia and led to nothing which can serve in any way to sustain the assumption of sympathetic transmission of irritation by way of the nerves as the cause of sympathetic ophthalmia.

49. **Lipoid Substances in Children's Urine.**—Reinike examined with the polarization microscope the urine of a hundred children and found a lipoid in the sediment in eight cases. In four the findings were brief but in the others the lipoid content kept constant through weeks and months. In two of these cases the kidney was the seat of chronic degenerative processes with edema, ascites and uremic attacks. The first was a girl of 12 and the kidney disease was of two years' standing. The other was a girl of 4 with serious kidney disease for ten months. No preceding infectious disease was known in either case. The two other children presented symptoms of a mild kidney trouble and only the discovery of the lipoids in the urinary sediment suggested the severity of the kidney disease, confirmed by the course of the cases. The discovery of these optically active lipoids in the urine sediment thus serves to differentiate even in children degenerative kidney disease from the inflammatory and functional. He never found such large proportions of these lipoids in children as he has found in some adults, especially in one adult case of syphilitic disease of the kidney. On the other hand, he has never found them in the urine of healthy children or in those with acute disease.

Medizinische Klinik, Berlin

November 22, X, No. 47, pp. 1703-1726

50 Protection against Epidemic Diseases at Vienna. (Sanitatspolizeiliches.) A. Böhm.
51 *Oxygen in Treatment of Gas Phlegmons. (Behandlung der Gasphlegmone mit Sauerstoffeinblasung.) P. H. Sudeck.
52 War Injuries of the Eyes. (Augenverletzungen im Kriege und ihre Behandlung.) C. Adam.
53 War Injuries Affecting the Ears. (Kopfverletzungen im Feble vom Standpunkte des Otologen.) R. Goldmann.
54 *Treatment of Chilblains. (Frostbeulen.) Schwering.
55 *Treatment of Leukorrhea. (Fluor albus.) E. Zweifel.
56 Case of Adalin Poisoning. (Adalinvergiftung.) H. Dierling.
57 Influence of Balneotherapy on the Concentration of the Blood in the Capillaries. J. Lowy.
58 *Treatment of Decubitus. O. Nordmann.

51. **Oxygen in Treatment of Gas Phlegmons.**—Sudeck reports that he was able to save not only the life but the limbs of two men each of whom had had the bone in one arm much shattered and an extensive gas phlegmon had developed in the purulent wound. Thiriar plays a jet of oxygen on the raw surface after amputations, but Muller introduces the oxygen directly into the tissues through a stout cannula, and does not think it necessary to open up the phlegmon otherwise. It is this technic which Sudeck applied, pushing the cannula down into muscle tissue. The part swells up, but this subsides as the oxygen is gradually absorbed. The oxygen emphysema is still perceptible for

several days. As gangrene sets in so promptly from a gas phlegmon, he urges that no time should be lost before applying the oxygen. The German hospital trains, he says, now carry tanks of oxygen for this purpose.

54. **Chilblains.**—Schwering paints the region with tincture of iodin without preliminaries and then swabs the region, as soon as it is dry, with pure ichthyol. Then he presses cotton down into the sticky ichthyol until no more will stick. The stocking or glove protects the region, and the dressing is kept dry and left unmolested for from three to five days. Itching is relieved at once, and he has never known this treatment to fail.

55. **Sugar Solution in Treatment of Leukorrhea.**—Zweifel was impressed with the fine results reported by Kuhn and Bäumer from the use of sugar solution in treatment of gynecologic affections, as also with Magnus' success with it in 100 cases of acute or chronic osteomyelitis. Magnus and Bäumer use the sugar in substance, pouring from 150 to 250 gm. on the wound. Sudeck has applied the sugar treatment in sixty-six cases of leukorrhea of long standing, rebellious to all other measures. He used a 50 per cent. solution for rinsing the vagina or had the woman dissolve in the irrigator two tablespoonfuls sugar in two tablespoonfuls of hot water. When cooled sufficiently, this was allowed to flow into the vagina after she had settled down in bed for the night. This was repeated after eight or ten days, and over two-thirds of the women returned then to extol the improvement or cure.

In the few cases in which the sugar treatment failed to realize a complete cure, he ordered vaginal injection of a 0.33 or 0.5 per cent. solution of lactic acid after swabbing out the vagina with a 5 per cent. solution of silver nitrate. In thirty-eight cases in which this treatment was applied, there were no failures. The bacteria in the vagina were sensitized, as it were, by the nitrate so that they succumbed more readily to the action of the lactic acid. He orders the latter diluted with equal parts water; a teaspoonful of this to a pint of water for the douche.

58. **Treatment of Decubitus.**—Nordmann advises dry powders in treatment of decubitus unless there is much discharge when treatment as for any discharging wound is preferable. If there are complications or if the necrosis is extensive, nothing can compare with the continuous bath in treatment of decubitus. Not the least of its advantages, he remarks, is that the body floats to a certain extent in the water and thus further pressure on the region is avoided.

Münchener medizinische Wochenschrift, Munich

November 24, LXI, No. 47, pp. 2269-2300

59 *Cure of Spasmodic Twitching under Calcium Chlorid. (Ueber erfolgreiche Behandlung des Tic convulsif durch Chlorkalzium.) R. Emmerich and O. Loew.
60 Serodiagnosis of Small-Pox. (Komplementbindung bei Variola.) A. Klein.
61 Diphtheria Antitoxin in Treatment of Erysipelas. O. Polak.
62 Treatment of Syphilis. (Ueber Abortivkur, Spirochätenreste und kombinierte Behandlung der Syphilis.) W. Lier. Commenced in No. 46.
63 *Technic for Operations in the Field. (Einige Winke für das Operieren im Felde.) G. Perthes.
64 Treatment of Tangent Gunshot Wounds of the Skull. J. Oehler.
65 Bullet Entering Tissues May Be Deflected to Progress Sideways. (Ueber Querschlägerverletzung; Geschosswirkung des deutschen und französischen Spitzegeschosses.) J. Fessler.
66 Typhoid. (Zur Behandlung und bakteriologischen Diagnose des Typhus abdominalis.) L. Jacob.
67 Treatment of Deep and Threatening Emphysema in Skin and Soft Parts. (Haut-Weichteilemphyseme.) F. Kroh.
68 Simple Device for Locating Foreign Bodies. (Der Schwebemarkenlokalisator.) H. Wachtel.
69 In the Field Hospital. (Kriegschirurgische Erfahrungen in der Front.) W. Danielsen.

59. **Calcium Chlorid in Treatment of Tics.**—This last communication from the late Professor Emmerich gives a review of the literature on the treatment of nervous disturbance with calcium salts. Much evidence has accumulated that the functioning of nerves and muscles is dependent on the normal course of calcium metabolism. O. Loew has apparently established that the normal functioning of the cell is controlled by the calcium content of its nucleus, and others have shown that administration of calcium salts reduces to normal the exaggerated excitability of certain nerves. These and other data cited justify systematic calcium treatment of spasmodic twitching of all kinds, especially as we know that no gross anatomic basis can be discovered for *tic convulsif*, for example. The success from systematic administration of calcium chlorid in the two severe and chronic cases of *tic convulsif* reported amply confirm the above views. The first patient was a locksmith of 49, who for twenty years had suffered from chronic spasm of the muscles in the neck and right arm, and they had gradually increased in intensity during the last ten years until there were forty-five a minute and the muscles had become enlarged, while the man was becoming so exhausted that a fatal outcome was imminent. At each spasm the head was twisted around. Except for potatoes, he seldom or never took vegetables, fruit or milk, although his diet was plentiful, mostly eggs, meat and bread. The calcium content of this diet averaged only 0.721 gm., while the magnesia content was 1.113 gm. A solution of 100 parts pure crystallic calcium chlorid in 500 parts distilled water was ordered, a teaspoonful three times a day. By the fourth month there were only eight spasms a minute, and by the eighth month the tic was entirely cured and the strength regained. Equally good results were realized from the same treatment in a case of spasmodic rotation of the head from spasm of the splenius capitis. By the fifth month the patient, a letter carrier, was entirely free from his *tic rotatoire*.

63. **Field Operations.**—Perthes remarks that when an operation has to be done at once it is a comfort to realize that bacteria do not hop, like fleas, but can be kept out of wounds when direct contact is prevented. Important points to bear in mind are to use as few instruments as possible, sterilize by boiling when steam is not quick enough, use small aprons of rubber tissue at need, boiling them with instruments, sterilizing the hands with alcohol alone when there is no water to wash them. Rubber gloves are the main reliance in military surgery and protect against infection. A forehead lamp with powerful dry battery hung from the belt is a great assistance or an acetylene bicycle lamp. These lamps are too clumsy to be fastened to the forehead, but a reflector can be worn there.

Wiener klinische Wochenschrift, Vienna

November 19, XXVII, No. 47, pp. 1501-1528

70 *Continuous Bath in Treatment of Phlegmons. M. Riehl.
71 *Cholera and Vaccination. L. Arzt.
72 Conservative Treatment of War Phlegmons. (Die Kriegsphlegmone.) E. Suchanek.
73 Comparative Meteorology of Winter Seaside Resorts. E. Homa.

70. **The Continuous Bath in Treatment of Phlegmons.**—Riehl deplores that greater use is not made of the local benefit from the continuous bath in treatment of burns and extensive wounds. The pain of a severe wound is relieved at once and, as there are no dressings, the discomfort from change of dressings is avoided. The suppurating surface is kept constantly clean by being laved with the water, and he has seen many remarkably prompt cures under it. He has recently been applying this method for progressing phlegmons and has found it so effectual that he commends it to all when incision and draining do not arrest the progress of a phlegmon or when threatening general symptoms develop. The tub must be at least 110 cm. long; a blanket and some hair cushions will protect the body from contact with the metal. The water should be of the temperature most agreeable to the patient and, to keep the heat in, the tub should be covered with boards and blankets. It is not necessary to have a constant supply of fresh tempered water. The patient can be transferred to another tub after a few hours. He can be lifted on a sheet at need. The continuous bath is particularly useful for decubitus.

71. **Cholera.**—Arzt had 24 per cent. mortality in his twenty-five cases of cholera. He has the body rubbed perseveringly with spirit of camphor during the painful cramps and injects

salt solution, sometimes using a 1.5 per cent. solution. After the patient has thus been tided past the first collapse, he gives bolus alba systematically and repeats the saline infusion twice a day. Three of his patients had a pronounced eruption during the cholera. One of his attendants contracted cholera thirty-eight hours after the first anticholera vaccination. The second vaccination followed in five days, and two days later she developed cholera, but it ran a mild course with complete recovery in five days. One man was vaccinated during the incubation of cholera and except for vomiting he had no further symptoms of cholera. There were no serious by-effects from the anticholera vaccination in any instance.

Zeitschrift für Kinderheilkunde, Berlin

November, XII, No. 1, pp. 1-74

74 Radiology of Pleural Effusions in Children. E. Rach.
75 Effect of Friedmann's Tuberculosis Treatment in Children. H. Opitz.
76 Transformation of Energy and Metabolism in an Atrophic Infant. (Der Energie- und Stoffwechsel eines atrophischen Säuglings.) H. Bahrdt and F. Edelstein.

Zeitschrift für Urologie, Berlin

September, VIII, No. 10, pp. 739-778

77 *Hydronephrosis; Twenty Cases. W. V. Simon.

77. **Hydronephrosis.**—This communication from the University surgical clinic at Breslau reports that the hydronephrosis was certainly congenital in 13 and probably congenital in 2 more of the 20 cases reported. The ages ranged from 6 months to 67 years. There was some deformity in the kidney or its vessels in 3 of the cases,, and acquired causes were evident in 7, including 4 of trauma and 1 of obstruction from gravel. In 5 cases there was some concomitant affection, pleurisy, peritonitis, chronic pancreatitis, interstitial nephritis or severe arteriosclerosis. When the hydronephrosis is intermittent and not very serious and is evidently brought on or aggravated by movability of the kidney, attempts to restore the kidney to place without an operation are justified. Massage, bandages, etc., may answer the purpose. If there is no or very little functionally capable kidney tissue left, nephrectomy should be considered if no tumor or stones or abnormal vessels can be found to explain the hydronephrosis. The urine on the side affected may contain blood, but in 2 of the cases reported blood was found in the urine from both kidneys and albumin in 2 cases. All the abnormal findings in the urine may disappear during the intervals between attacks. The distended kidney in one case projected past the median line so far that the tumor seemed to be on the sound side. Generally a prolongation of the tumor into the kidney region can be palpated. Remnants of kidney substance may form knobby protuberances that can be palpated on the surface of the kidney. An important differentiating sign is the persistence of the area of dulness in the same spot on change of position.

He does not approve of exploratory puncture on account of the danger of infection, as, for instance, with echinococcus disease. The contents of the hydronephrotic kidney may resemble the fluid in an ovarian cyst so that puncture may prove misleading. The 20 cases are described in detail. Nephrectomy was done in 9; in 5 not until after the sac had been sutured to the skin and tapped. In 3 a conservative-plastic operation was done. One patient with an old (seven months) and infected hydronephrosis died soon after the operation and one from after-hemorrhage and embolism. In 3 other cases the hydronephrosis was probably infected, but 2 of the patients were cured; the outcome in the other case is not known. The conservative-plastic operation did not cure the hydronephrosis in one of the 3 cases and 2 were only improved in the 9 nephrectomy cases. The other surviving patients were all cured by the intervention.

Zentralblatt für Chirurgie, Leipzig

November 28, XLI, No. 48, pp. 1705-1720

78 *Symptoms in Genital Organs with Appendicitis. (Untersuchung auf Genitalsymptome zur Unterstützung der Diagnose bei Appendicitis.) O. Lanz.

78. **Genital Symptoms in Appendicitis.**—Lanz corroborates ten Horn's statement in regard to the pain elicited by pulling on the right spermatic cord when there is acute appendicitis (mentioned in these columns recently, July 4, p. 69). Lanz has found a number of other differentiating phenomena, as he illustrates by eight typical cases. Particularly in children, frequent and painful micturition is often an early sign of appendicitis. In both children and adults, when the forefinger is worked into the inguinal canal on the left side no appreciable resistance or pain is experienced, but on the right, if the appendix is inflamed, the muscles contract as the finger is introduced into the inguinal canal so that it is impossible to work it in deep, and if the patient coughs while the finger is in the canal, there will be local pain. The spermatic cord is also painful on pressure when it is pulled, and when it emerges from the canal it is swollen and tender. The cremaster reflex on that side is usually weak or abolished entirely with acute appendicitis. If the appendix is situated abnormally low, muscular rigidity and tenderness may be found in the lumbar region or may be detected through the rectum. Lanz has previously called attention to the relaxation of the sphincter muscle when the pouch of Douglas is being invaded. When there is actual suppuration in the pouch of Douglas, the sphincter may gape completely.

Zentralblatt für Gynäkologie, Leipzig

November 21, XXXVIII, No. 47, pp. 1425-1440

79 *Apparatus for Measuring the Roentgen Rays. (Das Iontoquantimeter; ein neues Messgerat für Rontgenstrahlen.) H. Meyer.

November 28, No. 48, pp. 1441-1464

80 *Mesothorium in Treatment of Cancer in Female Genital Organs. J. Braude.

79. **Apparatus for Dosage of Roentgen Rays.**—Meyer gives an illustrated description of the iontoquantimeter for measuring radiant energy. It is based on the physical phenomenon that air which is absorbing Roentgen rays becomes a good conductor for the electric current. The electrometer dial thus indicates the amount of rays being absorbed. It shows further, he explains, the surface energy and the degree of hardness of the rays, and thus he thinks we get an absolute measure of the radiant energy being applied.

80. **Mesothorium in Treatment of Cancer of the Uterus.**—Braude describes his experience in this line in 44 cases at Strassmann's gynecologic clinic since October, 1913. The reaction to the mesothorium exposures is as a rule proportional to the extent of the cancer, and thus serves as a basis for the prognosis. In 2 cases the reaction was so intense that the patients succumbed. The technic has been modified since so that an interval of several weeks follows each series of eight or twelve exposures in the course of two or three weeks. One is clinically cured of the 2 patients with inoperable cancer previously cauterized. In the 7 cases of inoperable recurrence after an operation, 2 of the patients are clinically cured; 2 have died and the outcome is not known in the other cases. Eight of the 10 operable patients are clinically cured and 3 of the 6 whose general condition forbade operative treatment. He bases the assumption of a clinical cure on the improvement in the general condition and weight as well as the local healing of the lesion. The invariable cessation of menstruation shows that the ovaries have felt the effects of the rays, and this gives grounds for assuming that the tissues between the ovaries and the mesothorium in the vagina have also felt the effect of the rays. In the bleeding inoperable cases, with fetid discharge and great weakness, the benefit from the mesothorium was beyond anything yet realized by any means outside of radiotherapy, and it has lasted for about a year to date in the typical case described.

Zentralblatt für innere Medizin, Leipzig

November 14, XXXV, No. 46, pp. 1001-1016

81 Heart-Block with Paroxysmal Auricular Flutter. (Fall von Herzblock mit paroxysmalem Vorhofflimmern.) J. S. Schwarzmann.
82 *Angina of the Abdomen. (Zur Symptomatologie und Therapie der Angina abdominis.) M. J. Breitmann.

82. **Angina Abdominis.**—Breitmann has had a number of patients with attacks of pain in the abdomen, meteorism and other symptoms closely analogous to those of angina pectoris and due to arteriosclerosis of the abdominal vessels or vascular cramp. The patients were usually men, including many syphilitics and others inclined to abuse of alcohol or tobacco. Relief followed escape of gases; they were probably the result of arteriosclerotic paresis of the intestine and ischemia interfering with peristalsis and absorption. Pallor, vertigo, syncope for a few minutes or hours, and the radiation of the pain to the heart and the left shoulder are characteristic, as also abnormal pulsation in the region of the abdominal aorta or epigastrium. The region of the abdominal aorta and a point toward the right on the line joining the ninth ribs were especially sensitive. The colic pains occurred periodically in various parts of the abdomen, generally at the hieght of digestion, and were accompanied by distention, fetid stools, eructation and vomiting as a rule. The free intervals might be months in length. The nocturnal attacks of pain were the most severe. The blood-pressure was often but not always high during the attacks. In one case the woman had had spasms of colic about once a year from childhood, but in the last three years they came oftener and were sometimes accompanied by vomiting of blood, but energetic palpation during and after the attacks never caused pain; ergot gave relief in this case. In some cases the trouble seems to involve the stomach and heart; some reflex action from the irritable stomach exerts a depressing or paralyzing influence on the already oversensitive and functionally weakened heart. Sudden death with consciousness unimpaired is common in this type, which is usually a syphilitic angina pectoris or abdominis. It is generally mistaken for a gastro-intestinal trouble until necropsy reveals the arteriosclerosis of the abdominal vessels. Especially with syphilitic disease of the abdominal aorta, the pain is intense and the patient can get relief only in the knee-chest position.

Gazzetta degli Ospedali e delle Cliniche, Milan

November 19, XXXV, No. 127, pp. 1957-1972

83 Artificial Pneumothorax. G. Breccia.
84 *Veronal Poisoning. A. Carafoli.

November 22, No. 128, pp. 1973-1988

85 Salvarsan and Neosalvarsan in Current Practice. F. Marinelli.

84. **Veronal Poisoning.**—A woman of 32 took 11 gm. of veronal with suicidal intent. When seen next day she was unconscious, the pulse 60, the respiration 18. The pupil reflexes were abolished and there was slight nystagmus, but there did not seem to be any sensation of heat, pain or contact at any point on the body for five days. Under repeated injections of ether, caffein and strychnin the woman roused the next day, but seemed confused, with hallucinations for three or four days more. There was no vomiting at any time or incontinence. The urine had to be drawn for the first two days.

Policlinico, Rome

November 8, XXI, No. 45, pp. 1569-1600

86 *Modified Bassini Operation for Inguinal Hernia. (Modificazione al metodo Bassini nella cura del laparocele inguinale.) O. Tenani.

86. **Modified Bassini Operation.**—Tenani's modification aims to reenforce the weak point in the abdominal wall by superposing the aponeurosis above and below. After the usual Bassini technic he sutures the internal oblique and transversalis muscles and the fascia transversalis to the posterior margin of the gap, and the upper flap of the aponeurosis of the external oblique. In making this fourfold layer he is careful to keep all the fibers in their natural position in regard to each other. Then he slits the margin of the aponeurosis across, on a line with the internal inguinal ring, slitting thus both the upper and lower flaps of the aponeurosis. The edges of the two flaps thus formed are superposed and sutured under the cord, drawing the whole toward the median line. In cases of an exceptionally large opening he resects some of the aponeurosis. He has operated with this technic in numbers of cases with permanently good results in all. The superposed flaps of aponeurosis form a stout pad around the cord. The opening left is more oblique than in natural conditions, which is an additional barrier against recurrence. These advantages far outweigh the drawback that the cord is left to run subcutaneously. None of his patients and none of Postempki's seventy-eight has had any inconvenience from this subcutaneous location of the cord, while all have been permanently cured of the tendency to hernia at this point. He gives the details of fifteen typical cases.

Riforma Medica, Naples

November 13, XXX, No. 46, pp. 1261-1288

87 Serodiagnosis of Cancer. (Sulla siero diagnosi dei tumori maligni col metodo della dialisi di Abderhalden.) A. Fulchiero.
88 The Luetin Test for Syphilis. (Valore clinico della reazione alla luetina) (Noguchi). E. Curti.

Tumori, Rome

September-October, IV, No. 2, pp. 129-256

89 Failure of Attempts to Inoculate with Alien Tumor Tissue. (Sui tentativi di trasmissione dei tumori per innesto eterogeneo.) R. Brancati.
90 Myxoma in the Heart of an Ox. U. Soli.
91 Fibroma of the Tunica Vaginalis. A. Avoni.
92 Modes of Spread of Cancer. (Intorno al vario modo di generalizzarsi del carcinoma. D. B. Roncali.
93 History of the Method of Treating Cancer by Autolysates of Tissues: Histogenous Chemotherapy. (Sulla oncoterapia biologica.) G. Fichera.

Grèce Médicale, Athens

November 1 and 13, XVI, Nos. 21 and 22, pp. 41-44

94 *Pain from Minute Uterine Fibromas during Pregnancy. (Des accidents douloureux qui accompagnent les petits fibromes utérins pendant la gestation.) G. Stavridès.

94. **Pain from Small Fibromas in Pregnant Uterus.**—Stavridès reports three cases in which fibromas—too small to be detected outside of a pregnancy—suddenly became enlarged and painful at the fifth or sixth month of pregnancy. Each could be felt as quite a large tumor sessile on the uterus and causing a slight reaction on the part of the peritoneum. Under repose and moist heat the disturbances subsided and the pregnancy progressed unmolested to term. Palpation three months later failed to reveal any trace of the tumor. It evidently had been located in the parenchyma, but under the stress of the pregnancy had parted the fibers in the wall of the uterus and forced its way to the outer surface. In a later pregnancy in one of the cases there was no disturbance from the minute fibroma, although it must still have been in its place in the uterus wall.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

II, No. 2, pp. 105-172

95 Bacteriology of Lymphogranuloma. H. Verploegh and Others.
96 Treatment of Gangrenous Process in Lung by Intratracheal Injections of Medicated Oil. A. Binnerts.

No. 3, pp. 173-240

97 Pericarditis as Complication of Chronic Kidney Disease. D. Klinkert.
98 Use of Alcohol in Hospitals, etc. J. Kat.
99 Anatomy of the Transverse Sinus. I. C. Henkes.
100 The Fourth Disease; Four Cases. (De Ziekte van Dukes.) P. H. Kramer.

No. 4, pp. 241-308

101 *Thyroid Treatment of Dementia Praecox. N. J. Lemel.
102 Osteomalacia. W. M. van der Scheer.

No. 5, pp. 309-380

103 Heliotherapy of Tuberculosis of Bones and Joints at the Seashore. M. D. Andreae.
104 Melancholia. (Depressieve Toestandsbeelden.) J. van der Torren.

101. **Thyroid Treatment of Dementia Praecox.**—Lemel is quite encouraged with the results of thyroid treatment in the twelve cases in which he has given it a thorough trial. These patients were all between 17 and 24. The improvement persisted for five years in one case, and then there was a return of the former condition. In the other cases the improvement has persisted to date, but the interval since has been shorter. In one case the interval is still too brief for estimation of the outcome.